AD-A166 480 A COMPARISON OF FORECASTED PROVISIONING REQUIREMENTS VERSUS EXPERIENCED DEMAND(U) DEFENSE LOGISTICS AGENCY ALEXANDRIA VA OPERATIONS RESEARCH AN... 1/1

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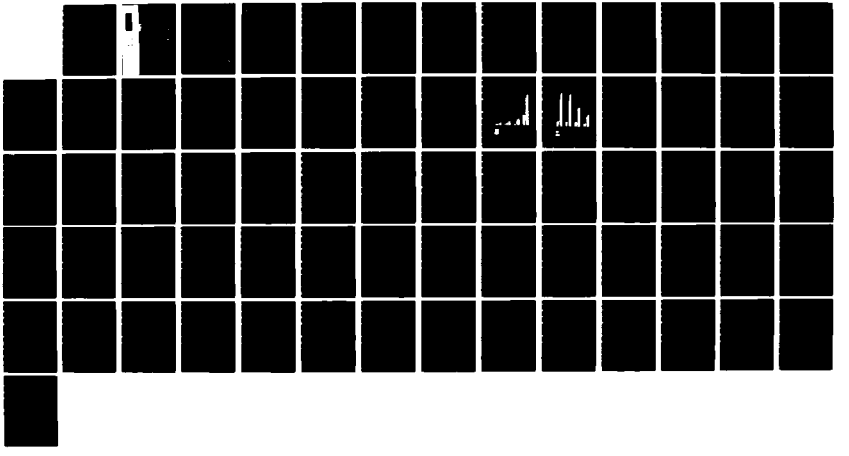

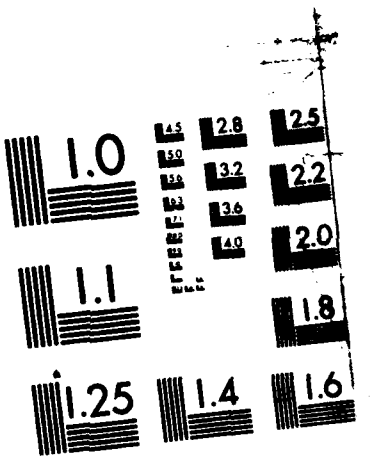

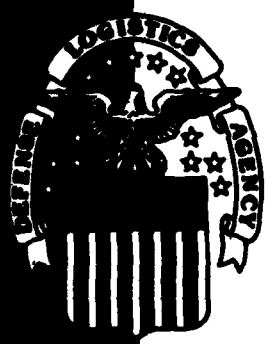

DEPARTMENT OF DEFENSE

DEFENSE LOGISTICS AGENCY

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REPORT ON A COMPARISON OF FORECASTED PROVISIONING REQUIREMENTS VERSUS EXPERIENCED DEMAND

MARCH 1985

A Comparison of Forecasted Provisioning Requirements Versus Experienced Demand

March 1985

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FOREWORD

This study compares the actual demands for new provisioning items to forecasted demands of Supply Support Requests (SSRs) which are being submitted by the Military Services. The objectives of the study were to determine: first, the validity of initial SSR estimates received in relation to item demands experienced, and second, if the forecast error could be significantly improved by using the additional requirements generated by the follow-on or reprovisioning SSRs. The total requirements estimate for a two-year period using initial SSR quantities in terms of acquisition value was found to be 349 percent greater than the total actual demand. The inclusion of follow-on or reprovisioning SSRs increased that percentage 60 percent to 409 percent.

The effort documented herein was a study; its findings and conclusions reflect the data at the time the study was conducted and should not be construed as the official position of the Defense Logistics Agency.

ROGER C. ROY
Assistant Director,
Policy and Plans

Executive Summary

I. INTRODUCTION. Current DLA provisioning policy uses information on initial Supply Support Requests (SSRs) to forecast demand and set inventory levels for new items, but it does not give equal consideration to forecasted requirements on reprovisioning or follow-on SSRs. Specifically, it does not incorporate the replenishment requirements submitted by the Military Services on follow-on or reprovisioning SSRs. Moreover, in the case of the retail requirements from these SSRs, they are only considered if their quantities exceed the current quarterly demand forecasts for the SSR items. Since these requests are "looked at" on an individual SSR basis, many of the forecasted requirements for an item or national stock number (NSN) are not procured at the time the supported end item is provisioned. The DLA Weapon Systems Support Office (DWSSO) requested that DLA Operations Research and Economic Analysis Office (DLA-LO) perform a comparative analysis of estimated versus actual requirements. The purpose of the analysis was to determine (1) the accuracy of SSR information and (2) the impact of using follow-on or reprovisioning information to forecast demand.

II. ANALYSIS. The methodology followed in the analysis was:

A. the design of a comparative analysis model,

B. the development of a data base to support the model,

C. and the execution of the model using computer resources.

Four DLA commodities (construction, electronics, general, and industrial) were sampled in the analysis. The availability of provisioning data limited the scope of the analysis to a two-year period beginning with the second quarter of Fiscal Year 1983 through the first quarter of Fiscal Year 1985. Requirements for this period were correlated with actual demands by quarter to determine the overall accuracy of SSR estimates.

III. FINDINGS. A total of 112,894 provisioning items having 955,901 SSRs were analyzed. The results of each commodity showing the relationship between actual demands and SSR forecasts were as follows:

Table I. Actual Demand vs. Forecasted SSR Requirements
(Units of Issue)

Commodity	Actual Demand	Initial SSR	Percent	Total SSR	Percent
Construction	416,338	532,959	(+ 28%)	607,793	(+ 46%)
Electronics	457,867	823,944	(+ 80%)	1,070,596	(+134%)
General	314,120	1,598,930	(+409%)	1,823,824	(+481%)
Industrial	2,951,666	7,994,827	(+171%)	8,849,997	(+199%)
Total	4,139,991	10,950,660	(+165%)	12,352,210	(+198%)

Although the volume of requests exhibited a large degree of variability from commodity to commodity, in 30 of the 32 quarters analyzed requirements forecasted exceeded actual usage. At the aggregate level, subsequent SSR requirements did not improve the forecast as related to actual demand. The industrial commodity accounted for approximately 71 percent of the total units issued. To obtain a more absolute measure of the magnitude of the differences that existed between the demands that were experienced for these items versus the initial and follow-on forecast requirements, the acquisition value of the items was used to determine a dollar cost difference between actual costs, initial SSR costs, and follow-on SSR costs:

Table II. Actual Demand vs. Forecasted SSR Requirements
(Acquisition Value)

Commodity	$ Value Actual	$ Value Initial SSR (%)	$ Value Follow-On SSR	$ Value Total SSR (%)
Construction	190.7	1039.8 (+445%)	144.8	1184.6 (+521%)
Electronics	181.6	935.7 (+415%)	207.6	1143.3 (+529%)
General	177.2	664.7 (+275%)	3.8	668.6 (+277%)
Industrial	120.9	372.5 (+208%)	45.1	417.5 (+245%)
Total	670.4	3012.7 (+349%)	401.3	3414.0 (+409%)

The construction commodity accounted for the largest portion of the provisioning buys with 34.5 percent, with the electronics items being second with 31 percent.

IV. CONCLUSIONS. The intention of this effort was to assess the effectiveness of the current DLA provisioning policy ~~as well as~~ to provide a basis and direction for future provisioning analyses. The methodology used in the analysis successfully provided a quantitative measure of the correlation between actual demand versus SSR forecasted requirements at the commodity level. ~~As can be seen from the magnitude of the percentages in the above tables,~~ estimates being received at each of the DLA Supply Centers (DSCs) for provisioning items were far in excess of actual recorded usage. Two variables, units of issue requested and acquisition dollar value, were used to measure the difference between actual demands and the forecasted requirements. Results from these separate analyses produced differences in terms of raw percentages at the commodity level. However, each confirmed the same conclusion, that aggregate item forecasts from the Military Services are substantially greater than true item demands. When the follow-on requirements were included in the total provisioning forecast, the percentage increases were remarkably close; 13.3 percent for acquisition value and 12.8 percent for units of issue. Although these results do indicate that some type of policy change considering the unique characteristics of items be developed, it does not endorse a blanket policy of using the total requirements from the initial and follow-on SSRs. The acquisition dollar value of buying the follow-on SSR requirements would be in excess of 400 million dollars for the two-year period studied.

V. RECOMMENDATIONS. The following recommendations are made as a result of this analysis:

A. Item-level analysis of each commodity should be conducted to identify the percentage of items that are being overforecasted, underforecasted, or accurately forecasted. This analysis should also include, as a minimum, stratification of items into subgroups based on their cost, weapon system criticality, and requesting Military Service.

B. The construction and industrial commodities should be given special attention because of their disproportionate share of the total provisioning activity.

C. Integrate key data elements from the Provisioning Control History File into the DLA Inventory Data Bank to ensure that a historical file of SSR requests older than two years is available for future analysis and access.

D. Initiate development of a stochastic-type simulation model to develop, evaluate, and design variable provisioning policies based on an item or group of items characteristics and behavior.

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I. INTRODUCTION.

A. The Provisioning Mission. "The principal objective of provisioning is to assure the timely availability of minimum initial stocks of support items at using organizations and at maintenance and supply activities to sustain the planned operation of end items until normal replenishment can be effected, and to provide this support at the least initial investment cost" [Ref:1]. To successfully accomplish this mission certain supply actions are required. Many of the related decisions are made in an environment of uncertainty as the true demand for support items is unknown at the time they are provisioned for.

B. The Provisioning Process. The provisioning process begins at the time a production contract is awarded for an end item of materiel, and continues through the period of time required to have such support items shipped by manufacturers and suppliers. The provisioning process does not normally include the acquisition of items for replenishment purposes or to augment existing stocks of items already established in the supply system. Follow-on provisioning is the subsequent provisioning of the same end item from the same contractor, and re-provisioning is the subsequent provisioning of the same end item from a different contractor [Ref:2].

The using Military Service has sole responsibility for the final selection and computation of the range and quantity of support items required for the initial service support requirements of an end item [Ref:1]. However, to be fully effective, provisioning must be a cooperative series of scheduled events between the customer (Military user) and the supplier (Defense Logistics Agency).

C. The Study.

1. Reason. To assess the effectiveness of current DLA provisioning policies, the DLA Weapons System Support Office (DWSSO) requested that the DLA Operations Research and Economic Analysis Office (DLA-LO) conduct an analysis of DLA managed provisioning items.

2. Scope. The scope of this study encompasses provisioning items managed at the following DLA Supply Centers (DSCs):

Defense Construction Supply Center (DCSC)
Defense Electronics Supply Center (DESC)
Defense General Supply Center (DGSC)
Defense Industrial Supply Center (DISC)

A more detailed description of these items will be provided in paragraph III, Data Base Requirements.

3. Objective. The intent of this study was to determine the magnitude of the impact at the commodity level of using subsequent provisioning (follow-on or reprovisioning) requests from the Military Services when computing initial stock levels for new items. Appendix A contains the study plan that was jointly developd with the DWSSO to accomplish this objective.

II. MODEL DESIGN.

A. System Description. The document which the Military Services utilize to communicate a specific provisioning requirement for an item to a DSC is called a Supply Support Request (SSR). Two important entries on the SSR are the retail quantity and the replenishment quantity. These quantities are the primary basis for determining the initial stocks of an item to be procured. The Standard Automated Materiel Management System (SAMMS) logic related to this process is discussed in detail in Chapter 38, New Item Procedures, and Chapter 39, Provisioning Procedures, of the DLA Supply Operations Manual [Ref:3]. Currently, the Services are only allowed to submit forecasted requirements based on the supported end items deployment schedule and use for the first year after the date of primary operational capability (POC) [Ref:4].

The retail quantity is intended to represent the quantities needed to initially stock or increase levels at the activities supporting the end item being provisioned. This requirement is considered a nonrecurring demand. Conversely, the replenishment quantity is defined as the number of items that are estimated to be required for replacement of pipeline stocks issued during the first year of operation of the end items being provisioned. Using these quantities from the initial SSR, initial stock levels are established for the item. These levels are limited to be no greater than the estimated procurement leadtime requirement (PALT) plus a 3-month combination Procurement Cycle/Safety Level requirement. The intent of this policy is to minimize the possibility of over procurement of a support item which, at this point, has only an estimated demand on which to base initial stock levels. This constraint is maintained during the demand development period (DDP) or until actual demands exceed forecasted demand. The DDP for DLA is the 2-year period subsequent to the Date Repair Parts Required (DRPR) as indicated in the SSR. Subsequent SSR retail and replenishment quantities are used separately to revise the Quarterly Forecasted Demand (QFD) or Numeric Stock Objective (NSO). Retail requirements are compared to the existing Procurement Cycle Quantity. If the retail quantity is greater, the difference is considered as an additive requirement. In the case of follow-on SSR replenishment quantities, adjustments are normally only made if there is a significant increase in forecasted demands validated by the item manager [Ref:5]. Since subsequent SSRs from the Military Services are transmitted and evaluated individually, a cumulative item requirement is not visible to the item manager at any specific point in time.

B. Analytical Framework. In an effort to evaluate the magnitude of requirements being submitted by the DLA customers (i.e., Military Services), a methodology was developed to accumulate item requirements and compare them to actual demand patterns on a quarterly basis over time. By design, the methodology contains specific assumptions and, consequently, has inherent limitations.

To model a typical DDP for a new item, a 2-year time period was delineated, beginning with the item's Date Management Assumed (DMA). The initial SSR was defined as the SSR with a DRPR date closest to but not earlier than the DMA date. All subsequent SSRs with DRPR dates occurring within a 2-year period thereafter were accumulated in an intermediate work file.

The allocation of the retail and replenishment quantities was another area which required clarification. It was assumed that 100 percent of the retail quantity of an SSR would be placed in the quarter in which its DRPR date was scheduled. The reasoning for this decision was that although the actual consumption of these items would probably occur beyond the DRPR date, the purpose of the retail requirement is to initially fill the supply pipeline below the wholesale level. Therefore, it was assumed that the entire quantity would be needed on the DRPR date. For the replenishment quantity, proration was done on a uniform basis with 25 percent of the total requirement being apportioned per quarter on a recurring basis beginning with the DRPR quarter.

C. Methodology. To obtain a comparison of actual demand and forecasted requirements, a uniquely designed database consisting of selected data fields from multiple data files was developed. This was done for each of the four hardware commodities; electronics, general, construction, and industrial. Once the provisioning items were identified among the total population summary, statistics were calculated to determine patterns or trends between or within commodities.

To isolate new provisioning items, two criteria were established. First, the item's Age of Item Code (AIC) was checked for code "N," which indicates that the item is "new" to the system. The second requirement used to categorize an item as a new item was to verify that the DMA date was after 1 January 1983. Only if an item met both of these criteria was it considered a new item and used in the subsequent analysis. By separating the new items from the established items, it was possible to compare provisioning requirements from the SSRs to the actual demand from the item records.

Two different item characteristics, units of issue and acquisition dollar value, were selected to be used to measure the differences between the SSR forecasts and the actual demands. Units of issue, although a nonstandard measure from item to item, is one of the critical data elements in terms of the total quantity requisitioned and is a common frame of reference for obtaining an aggregate assessment of the validity of item forecasts. However, acquisition value, computed as the item's unit price times its SSR quantity or demand quantity, provided a more accurate measure of the difference between the forecasted and actual quantities.

III. DATA BASE REQUIREMENTS.

A. Provisioning Data. To collect and accumulate the provisioning requirements, the Provisioning Control History File (PCHF) was requested from the Office of Data Processing (DASC-D) at DLA Headquarters. Appendix B contains a description and record layout of this file which is maintained at the commodity level. Each record in this file represents a SSR. Using the SSR's date of request (DOR) as a basis, the time period covered by the files received from DASC-D ranged from September 1982 to September 1984. Copies of these files were generated on magnetic tape and cataloged on the mainframe IBM computer located at Richmond, Virginia. The labeling convention used for these data sets is as follows:

FLO.ARNETT.PROV.X

where: X represents the commodity (i.e., C, E, G, I).

B. Item Data. To obtain demand data at the national stock number (NSN) level, the master item data files from the DLA Inventory Data Bank (DIDB) were used. These files contain recurring and nonrecurring quarterly demand quantities for the current quarter as well as for the three previous quarters. The record layout for this file is contained in Appendix C. The labeling convention used for these data sets is as follows:

COR.ITEM.YYQ.X

where: YY - represents the calendar year (i.e., 84)
Q - represents the quarter (i.e., 1, 2, 3, 4)
X - represents the commodity

Selected data elements from both the provisioning and the item files were extracted to create a combined fixed block record 246 bytes in length. The complete record layout of the new datasets is contained in Appendix D. The labeling convention used for these data sets is as follows:

FLO.FJP.PROV.CMBYX

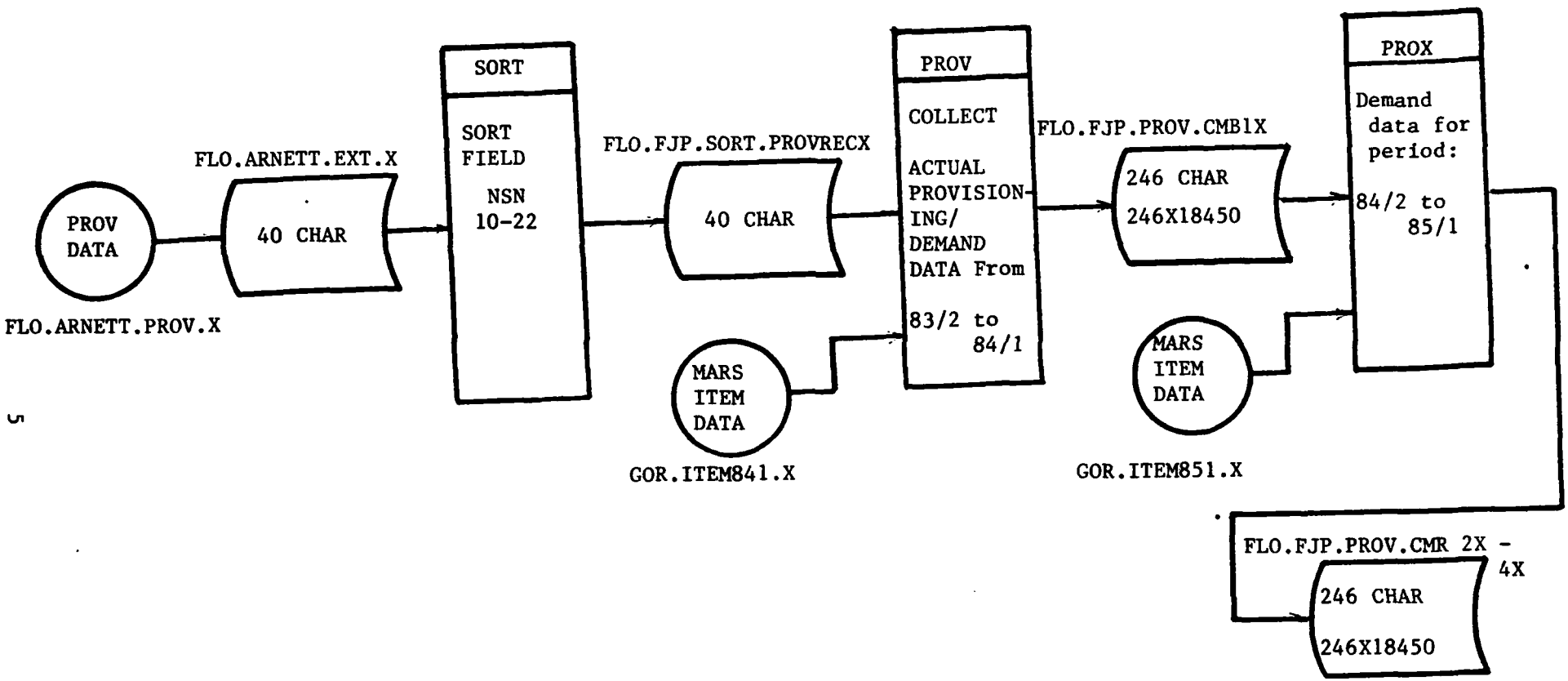
where: Y - is "4" for the case of using initial SSR requirements
- is "2" for the case of using follow-on SSR requirements
X - represents the commodity

The automated process which created these files will be explained in the next section, Model Computerization.

IV. MODEL COMPUTERIZATION.

A. Programming Languages. Due to the required sorting and matching of extremely large databases, COBOL was determined to be an appropriate computer language. To analyze the data sets which were created from the computer model, the Statistical Analysis System (SAS) language and the LOTUS 1-2-3 software on an IBM personal computer were utilized. The following paragraphs will explain how these languages were specifically used throughout the analysis.

B. Programming Execution. To develop the required data bases, COBOL extraction programs were written. A logic flow diagram describing this process is shown in Figure 1. The first step of this process was to extract the needed data elements from the provisioning file.



Provisioning Model Logic Diagram

Figure I

Ten data elements were selected from this file to be used in the analysis:

	Data Element	Field Length	Position in Record
1.	Activity Code	2AN	1-2
2.	Date of Request	4N	6-9
3.	Date Repair Parts Required	5N(3P)*	52-54
4.	Weapon System Designator	2AN	76-77
5.	Replacement-NSN	13AN	110-122
6.	Retail Quantity	5N(3P)*	123-125
7.	Acquisition Advice Code	1AN	127
8.	Replenishment Quantity	5N(3P)*	128-130
9.	Action taken code	2AN	306-307
10.	Service Code	1AN	329

*indicates original layout has a "packed" data element.

A copy of the COBOL program used to accomplish this requirement can be found at Appendix E, pages E-1 to E-3. The data set name for this program is FLO.ARNETT.ASM(PRO2). A second COBOL program was written to select the item data from the DIDB item data file and merge it with the provisioning data. This program is called, FLO.ARNETT.COBOL(PROV), and a listing of its computer code is contained in Appendix E, pages E-4 to E-9.

Twenty-one data elements from the 600 byte length item record were identified as needed for the analysis. The names of these elements, their field length, and position are listed below:

Data Element	Field Length	Position in Record
DLA Supply Center (DSC)	1 AN	1
National Stock Number (NSN)	13 AN	2-14
Supply Status Code (SSC)	1 AN	48
Standard Unit Price (UP)	9 N	55-63
Age Item Code (AIC)	1 AN	98
Item Category Code (ICC)	1 AN	99
Administrative Leadtime (ALT)	3 N	146-148
Production Leadtime (PLT)	3 N	149-151
Manage Assume Date (DMA)	5 N	165-169
Backorder Quantity (BOQTY)	9 N	204-212
Numeric Stock Objective (NSO)	9 N	270-278
Quarterly Forecasted Demand (QFD)	9 N	286-294
Quarterly Forecasted Demand, New (QFDN)	9 N	295-303
1st Qtr, Nonrecur Demand Qty (NDQ)	9 N	434-442
2nd Qtr, Nonrecur Demand Qty (NDQ)	9 N	443-451
3rd Qtr, Nonrecur Demand Qty (NDQ)	9 N	452-460
4th Qtr, Nonrecur Demand Qty (NDQ)	9 N	461-469
1st Qtr, Recur Demand Qty (RDQ)	9 N	490-498
2nd Qtr, Recur Demand Qty (RDQ)	9 N	499-507
3rd Qtr, Recur Demand Qty (RDQ)	9 N	508-516
4th Qtr, Recur Demand Qty (RDQ)	9 N	517-525

The first quarter data fields from the GOR.ITEM commodity files for Fiscal Years (FY) 84 and 85 were used to collect the eight successive quarters of demand data needed for the analysis. The matrix in Figure 2 indicates the demand data contained in each of these files.

Figure 2. Data Source Matrix for Quarterly Demand Data

Input File \ Demand Data	1Qtr	2Qtr	3Qtr	4Qtr
GOR.ITEM841.X	1/84	4/83	3/83	2/83
GOR.ITEM851.X	1/85	4/84	3/84	2/84

Both the recurring as well as the nonrecurring demand quantities were accumulated by NSN from these files. This was accomplished in two phases. The first phase collected the first four quarters (2/83 thru 1/84) of demand using the FLO.ARNETT.COBOL(PROV) program. Then using only those items identified in the first phase, a slighty modified version of this program called FLO.ARNETT.COBOL(PROX), was used to select the final four quarters of demand data. The code for this COBOL program is located in Appendix E on pages E-10 through E-15.

C. Validation Procedures. Each program used in the analysis was separately validated. Using the data files for the DGSC the results from each of the intermediate steps were reviewed for both computational as well as logical accuracy. Individual records from the new data sets were printed and matched against the proposed file layout to ensure that data fields were properly aligned with the desired formats. Intermediate counters were placed in the program to verify total record counts, invalid record counts, and output record counts. These counters provided an audit trail throughout the program so that program errors could be quickly isolated and resolved.

V. FINDINGS.

A. Defense General Supply Center (DGSC). For this Center, 12,372 NSNs were sampled. For each quarter from 2nd Qtr of 1983 to 1st Qtr of 1985 the actual demand quantities and the estimated demand quantities were compared. The statistical results from the SAS program for the General commodity are contained in Appendix F, pages F-1 to F-4. The initial SSR requirements experienced exceeded the total actual demands in six of the eight quarters. The standard deviation of the actual demand quantities exhibited an exponentially increasing pattern. The correlation coefficient matrix did not display any significant relationships between forecasted quantities and actual demand quantities.

All pairwise correlations greater than .7 from the matrix are shown below:

Quarter	Quarter	Correlation Coefficient
SDQ843	SDQ844	.98375
SDQ844	SDQ851	.97347
SDQ843	SDQ851	.95808
SDQ842	SDQ844	.94868
SDQ842	SDQ851	.92393
SDQ842	SDQ843	.91750
SDQ832	SDQ833	.78644
SDQ841	SDQ844	.78413
ADQ844	ADQ851	.77487
SDQ841	SDQ851	.76359
SDQ841	SDQ843	.75824
ADQ832	ADQ833	.75146
SDQ834	SDQ844	.73514
SDQ834	SDQ851	.71595
SDQ834	SDQ843	.71095

where: SDQ is total provisioning estimates (SSRs only)
ADQ is total actual demand

Unfortunately, the highest correlations were between estimated quantities (SDQ values) in the most recent quarters and not between actual and forecasted values for the same quarter. This indicates that requirements for these items appear to be stabilizing at a steady-state level. A variety of factors could be the cause of this. One explanation could be stabilization of the end item force structure or the use of some other procedure such as special program requirement (SPR) requests being used as a surrogate to provisioning. This observation seems to support the current SAMMs procedures which uses the most recent demand quantities in the computation of the QFD.

After the additional SSR requirements were incorporated into the provisioning requirements, the SAS program was again executed. Once again in only two cases, 4th Quarter/84 and 1st Quarter/85 (see page F-3), did the actual demands exceed the forecast. Next, a comparison of the estimated demand quantities from the initial run and this subsequent run were made. A major finding from this analysis showed that the requirements from the initial SSR accounted for 90 percent of the total requirement. The correlation coefficient matrix displayed results similar to the first run. The resultant statistics for this computer run are contained in Appendix F, pages F-3 to F-4.

B. Defense Construction Supply Center (DCSC). The sample size for this commodity was 24,845 items. In every quarter estimated demand far exceeded actual demand. As in the case of the general commodity, the standard deviations of the estimated values were relatively uniform, while standard deviations of the actual values showed a nonlinear increase over time. The stability of the standard deviation of the estimated values indicates that the estimating techniques being used are applied consistently quarter to quarter; however, for the actual demand quantities, it reveals an erratic pattern caused by a wide range of units demanded.

The correlation matrix values for predicting actual demand greater than .7 were as follows:

Quarter	Quarter	Correlation Coefficient
ADQ842	ADQ843	.85046
ADQ842	ADQ851	.73614
ADQ843	ADQ851	.80753

When the follow-on SSR requirements were added and the SAS program rerun, the disparity between actual and estimated values increased. For the construction commodity, initial SSR requirements accounted for over 87 percent of the total requirements.

C. Defense Electronics Supply Center (DESC). There were 38,460 items contained in the DESC sample. When using the initial SSR requirements, the aggregate level statistics continued to show a large variation between the estimated and actual quantities required. In every quarter, except the 1st Qtr/1985, the estimate from the initial SSR was substantially larger than the actual requirements. The correlation matrix did not reveal any strong predicters for the actual demand quantities. The results from the initial run can be found in Appendix F, pages F-9 thru F-10. When the follow-on SSR requirements were added, marginal increases were observed in each quarter. For DESC, the initial SSR requirements accounted for 76.9 percent of the total requirement. The correlation matrix using the follow-on requirements did not yield an improvement between any of the actual demand quantities and the other quarterly values. The statistical output using follow-on SSRs is shown on pages F-11 to F-12.

D. Defense Industrial Supply Center (DISC). This commodity had a sample size of 37,217 NSNs. In seven of the eight quarters, the requirements from initial SSR requests exceeded the actual demands. None of the coefficients from the correlation matrix for the actual demand quantities were greater than .5, which as in the case of the other commodities, indicated little or no predictability between the estimated and actual quantities. When the program was rerun with the follow-on requirements, all of the estimated quarterly quantities were greater than the actual demands. Initial SSRs accounted for 90 percent of the total DISC requirements. The output reports for the DISC commodity can be found from pages F-13 to F-16.

E. Summary. A total of 112,894 provisioning NSNs for all Centers were used in this analysis. The SSR requirements for the four DSCs totaled 12,352,210 units of issue of which 10,950,660 (88.7 percent) were submitted on the first SSR. The actual demand quantity for the two year period totaled 4,139,991. Percentagewise, initial SSR requirements for the two year period exceeded actual demands by 165 percent. When the additional requirements from the follow-on SSRs were added, this percentage increase to 198 percent. In 30 of the 32 quarters, it was observed that when the follow-on SSRs were considered, estimated quantities were greater than actual demand quantities. A commodity to commodity comparison is shown in Table III indicating the percentage overforecasted by SSR submittals.

Table III. Actual Demand vs. Forecasted SSR Requirements
(Units of Issue)

Commodity	Actual Demand	Initial SSR	Percent	Total SSR	Percent
Construction	416,338	532,959	(+ 28%)	607,793	(+ 46%)
Electronics	457,867	823,944	(+ 80%)	1,070,596	(+134%)
General	314,120	1,598,930	(+409%)	1,823,824	(+481%)
Industrial	2,951,666	7,994,827	(+171%)	8,849,997	(+199%)
Total	4,139,991	10,950,660	(+165%)	12,352,210	(+198%)

A graphical representation of the estimated versus actual values in terms of units of issue by commodity is shown in Figure 3. In terms of units of issue, DISC received the greatest requirements for provisioning items; however, the total dollar value represented by these requirements was the smallest of the four Centers analyzed.

When the dollar values of the initial SSR requirements and the follow-on requirements were compared, there was a significant decrease in the difference between the two categories as compared to the cost of items actually demanded. As in the case of units of issue, similar statistics for acquisition value, as shown in Table IV, were calculated.

Table IV. Actual Demand vs. Forecasted SSR Requirements
(Acquisition Value)

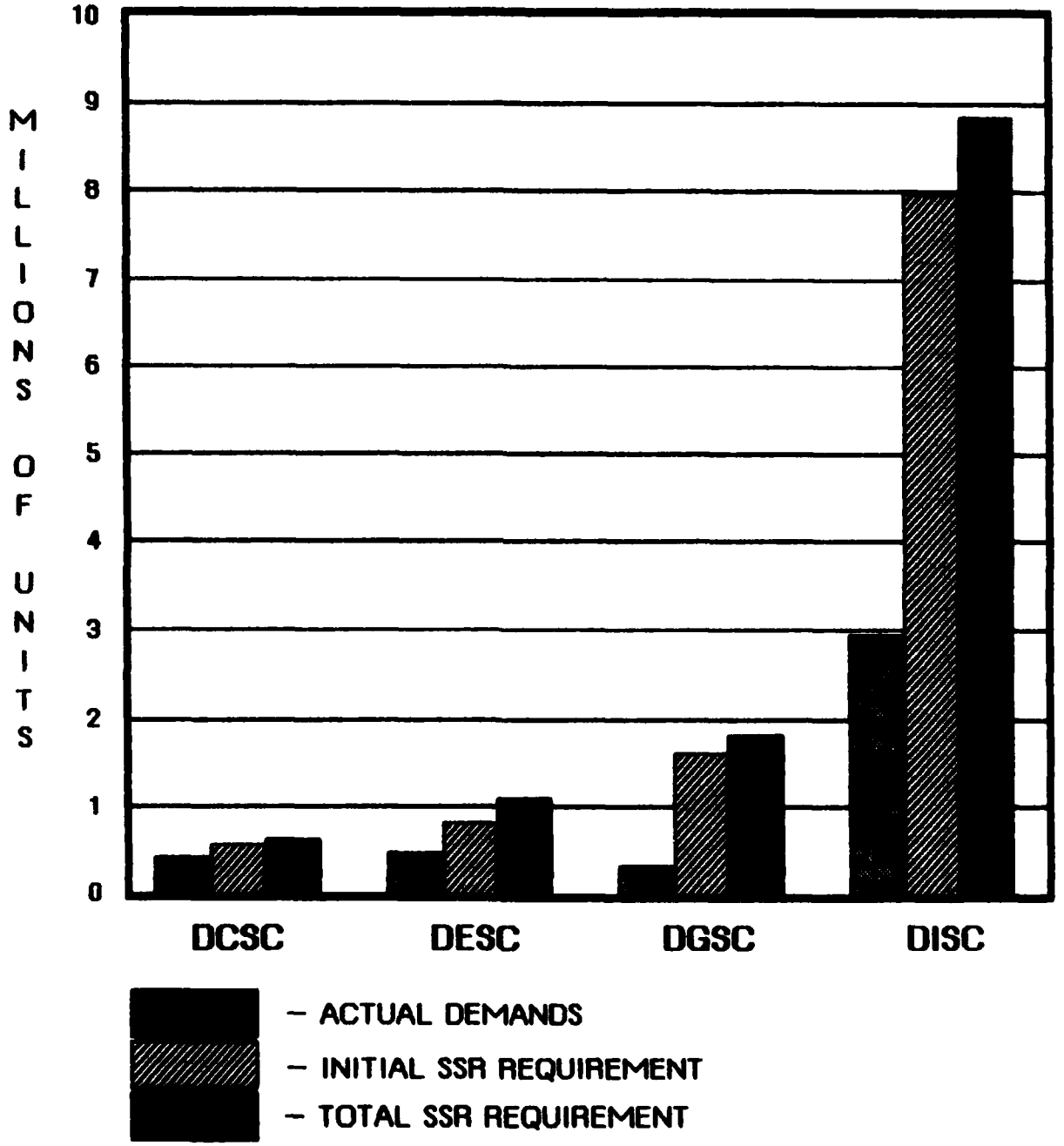
Commodity	$ Value Actual	$ Value Initial SSR (%)		$ Value Follow-On SSR	$ Value Follow-On SSR (%)	
Construction	190.7	1039.8	(+445%)	144.8	1184.6	(+521%)
Electronics	181.6	935.7	(+415%)	207.6	1143.3	(+529%)
General	177.2	664.7	(+275%)	3.8	668.6	(+277%)
Industrial	120.9	372.5	(+208%)	45.1	417.5	(+245%)
Total	670.4	3012.7	(+349%)	401.3	3414.0	(+409%)

These dollar values in terms of millions of dollars by commodity are shown in Figure 4.

FIGURE 3.

ACTUAL DEMAND VS. SSR REQUIREMENTS

(UNITS OF ISSUE)

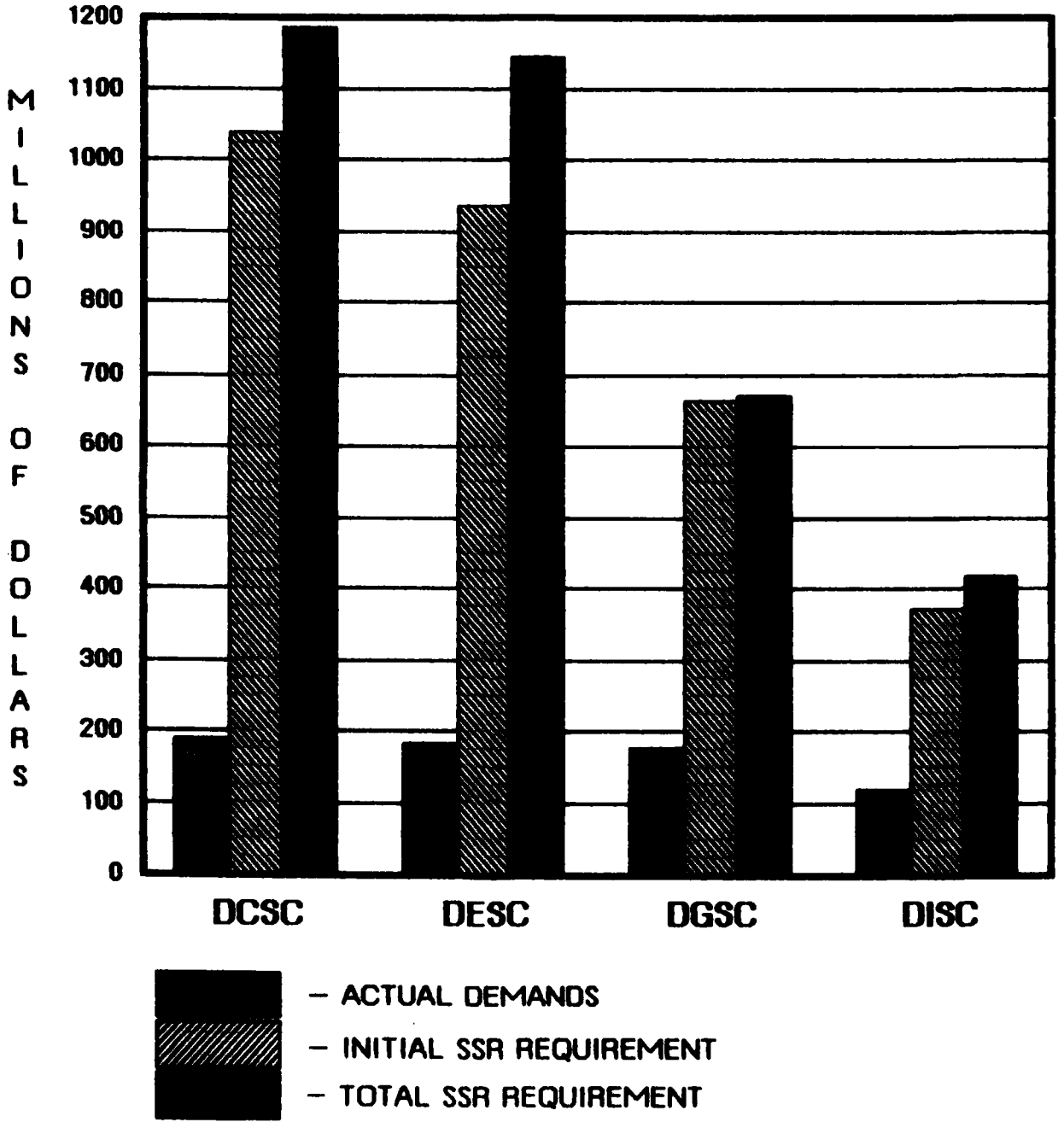


[1] TOTAL UNITS OF ITEMS DEMANDED
OVER THE TWO YEAR PERIOD, 2/83 - 1/85

FIGURE 4.

ACTUAL DEMAND VS. SSR REQUIREMENTS

(ACQUISITION VALUE) [1]



[1] TOTAL ACQUISITION VALUE FOR ALL ITEMS OVER THE TWO YEAR PERIOD, 2/83 - 1/85

Although this analysis provides only a macrolevel view of the provisioning process, a distinct pattern within and among commodities was evident. Provisioning estimates were consistently greater than the actual demand experienced for the four DLA commodities investigated. The result of including the follow-on or reprovisioning requirements continued to increase rather than decrease the percent error between the two values. Using the correlation coefficient matrices, a statistically significant relationship was not observed between actual quarterly demand values and estimated quarterly demand values. However, in some cases, the high correlation obtained between successive quarters of actual demand seems to endorse the current methodology used by SAMMS to compute the QFD value.

VI. RECOMMENDATIONS. As described in the study plan at Appendix A, the objective of this study was to assess the impact of follow-on or reprovisioning SSR requirements on the accuracy of provisioning estimates. First, it should be highlighted that even in the case of initial SSR forecast accuracy, there is an apparent tendency to overforecast the actual usage experienced for new provisioning items. The impact of subsequent SSRs shown on these estimates was approximately a 20 percent increase in the forecasted requirement. The model developed for this study was successful in collecting the data needed and performing the analysis requested by the DWSSO.

The visibility of provisioning requirements gained from this study provides many additional areas for more detailed analysis. The data bases that have been constructed from this project could be used for these follow-on efforts. Recommended items for investigation could include but would not be limited to:

A. Item-level analysis of each commodity should be conducted to identify the percentage of items that is being overforecasted, underforecasted, or accurately forecasted. This analysis should also include, as a minimum, stratification of items into subgroups based on their cost, weapon system criticality, and requesting Military Service.

B. The construction and industrial commodities should be given special attention because of their disproportionate share of the provisioning activity. This should be conducted in coordination with the appropriate Operations Research Offices at these Centers.

C. Integrate key data elements from the Provisioning Control History File into the DLA Inventory Data Bank to ensure that a historical file of SSR requests older than two years is available for future analysis and access.

D. Newly provisioned items, as evidenced by the results of this study, are not experiencing the demand which has been predicted for them by the Military Services. Although individual items may experience excessive demands, the aggregate statistics collected by this study's analysis does not support adoption of a blanket policy of using total forecasted SSR requirements. Development of a stochastic-type simulation model to evaluate alternative provisioning policies would be the appropriate tool to identify specific policies for new items.

APPENDIX A

Study Plan
(Revised)

Estimating Provisioning Requirements
DLA-LO Project #3033

I. Background: Currently, when a new item is provisioned in the DoD inventory, a supply support request (SSR) is submitted by the using Service in accordance with DoDI 4140.42. One objective of the SSR is to provide the managing ICP requirements information to establish item management levels. This data consists of the retail and replenishment quantities for the item.

The retail quantity is defined as the number of units of an item that are needed to fill the initial supply pipeline. This quantity is based on supporting the weapon systems which are fielded during the year after the initial operational capability (IOC) date. The replenishment quantity is defined as the number of items that are estimated to be required on an annual basis to initially establish wholesale levels. Both of these quantities are used to establish the initial levels of stock for the NSN in the SAMMS.

When an item initially enters the DLA system, the initial quarterly forecasted demand (QFD) in the SAMMS is determined taking the replenishment quantity and dividing it by 4. Since this quantity is based on requirements expected during the first year after IOC, the result has been backorders for some provisioning items. The item manager (IM) is then forced to make "spot" buys for these items at a premium cost.

After the NSN becomes an "established item," the retail quantity on follow-on SSRs is compared to the procurement cycle period (PCP) quantity. If the retail quantity is greater than the PCP quantity, then the difference in the two quantities is procured. By using this procedure, supply availability percentages are being maintained at acceptable levels; however, there is a desire to determine if other estimating techniques or management procedures could be used to increase supply availability within current budget constraints.

II. Objective:

A. Compare actual demand data to provisioning estimates of selected DLA items to determine the accuracy of currently used forecasting techniques.

B. Assess the impact of follow-on SSRs.

III. Scope:

A. This study will specifically investigate the appropriateness and feasibility of using provisioning data contained on follow-on SSRs to predict an items' demand pattern.

B. A representative cross section of DLA-managed items from selected ICPs will be examined.

IV. Study Approach:

A. Compare actual demand data to provisioning estimates of selected DLA items to determine the accuracy of currently used forecasting techniques.

1. Review current DLA provisioning policy.

Examine the SAMMS requirements computations used for provisioning items.

2. Survey existing or on-going research relating to the DoD wholesale provisioning process.

3. Evaluate currently used provisioning techniques.

a. Obtain actual provisioning data from the Provisioning Control History File (PCHF) from selected ICPs.

b. Collect actual demand data from the Supply Control File (SCF)for these NSNs.

c. Compare the actual demand experienced for these items to the provisioning requirements that were originally estimated by the Services on a quarter by quarter basis.

d. Perform statistical tests to determine if a significant difference exists between the actual and the estimated forecast.

B. Assess the impact of follow-on SSRs on an item level basis.

1. Merge selected data fields from the PCHF and DIDB item data files at an NSN level by commodity.

2. Utilize the Statistical Analysis System (SAS) to generate descriptive statistics of provisioning estimates from follow-on SSRs.

C. Final report.

1. Prepare final draft study report and information briefing.

2. Present briefing on study findings to DLA-OP.

V. Responsibilities:

A. Study Sponsor: The Logistics Program Division of the Directorate of Supply Operations (DLA-OP) is the sponsor for this study.

1. Point of Contact is Mr. Mike Pouy, primary, DWSSO (x47975).

2. Sponsor will:

a. Assist in determining the appropriate field activities of DLA to gather study information.

b. Provide needed interpretations to DLA provisioning policies as outlined in DoDI 4140.42.

c. Assist in developing and verifying the study assumptions, methodology, and results.

d. Assist in the collection of needed provisioning and demand data.

B. Performing Organization: The Operations Research and Economic Analysis Office (DLA-LO) is the developer of this study.

1. Point of contact is Captain Gary W. Arnett, USAF, DLA-DORO (Team F), Ext. 46183.

2. Analyst will:

a. Determine program resources, develop approach, and complete study objectives.

b. Provide monthly status report by IOM to sponsor.

c. Develop final report and give briefing.

VI. Schedule:

Milestones	Estimated Completion Date
A. Review DLA provisioning policy	15 Jul 1984
B. Survey of on-going research	15 Aug 1984
C. Fact finding/evaluate current policies	15 Sep 1984
D. Finalize study objectives	22 Sep 1984
E. Objective IIA and IIB	
(1) Develop methodology	15 Dec 1984
(2) Perform analysis	31 Jan 1985
(3) Document results	15 Feb 1985
G. Prepare final draft report and briefing for internal review	28 Feb 1985
H. Publish final report and present briefing to DLA-OP	15 Mar 1985

VII. Costs and Benefits:

A. Costs: An estimated level of effort of 6.0 analyst staff-months will be expended by DLA-LO on this study. Additionally, computer programming and administrative resources will be required by DLA-LO to complete this project.

B. Benefits: Findings from this study will provide an assessment of currently used provisioning criteria. These results will provide a basis for future efforts directed at improving the effectiveness of DLA provisioning policies.

Robert L. Sims
ROBERT L. SIMS, Colonel USAF
Chief, Operations Research and
Economic Analysis Office

7 March 85
Date

Laurence G. Kohler
LAURENCE G. KOHLER
Chief, Logistics Program
Division

18 March 1985
Date

FILE SUMMARY

FILE NAME:	Provisioning Control History File
FILE INDEX NUMBER:	USXTPCHF
PURPOSE:	To provide for the retention of Supply Support Requests up to 180 days after all decisions have been made as to the support or nonsupport of the item.
RECORD SIZE:	360 Bytes - Fixed Length
BLOCK SIZE:	6120 Bytes
ACCESS METHOD:	Sequential
SEQUENCE:	Provisioning File Controls (Activity Code From - Provisioning Control Code - Date of Request - Item Serial Number)

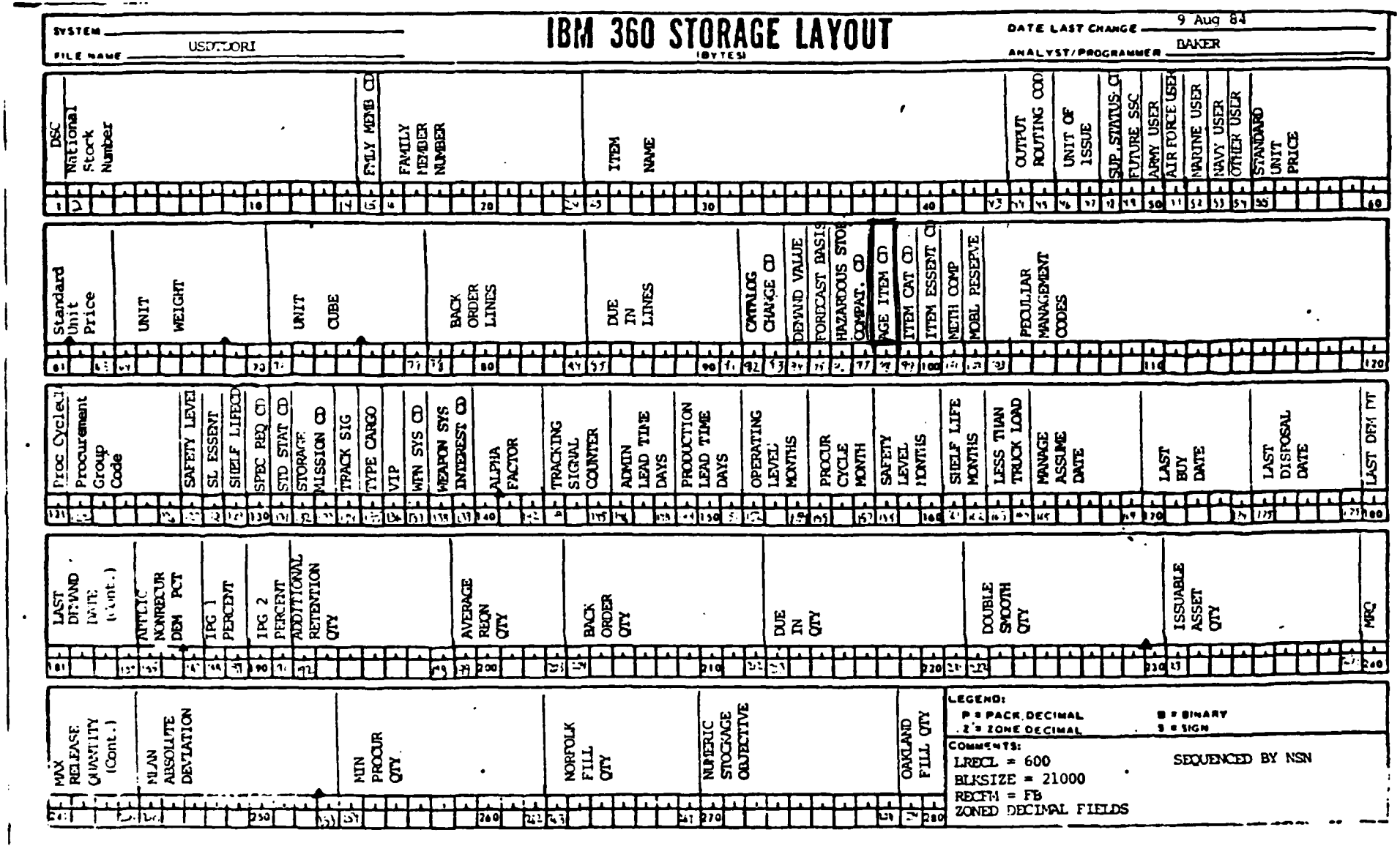
DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
PVNG-CTL-KEY A093 FROM CWA	15 AN	1-15
ACTY-CD-FR A072	2 AN	(1-2)
PVNG-CLT-CD A082	3 AN	(3-5)
REQST-DT A083	4 AN	(6-9)
ITM-SERNO A083 (FROM CXA, CXB, CXC)	6 AN	(10-15)
DLSC DOCNO 1015 (GENERATED)	16 AN	16-31
ORGTG-ACTY-CD 4210	2 AN	(16-17)
SUBMG-ACTY-CD 3720	2 AN	(18-19)
ESTAB DT 2310	5 AN	(20-24)
DLSC-DOC-CTL-SERNO 1000	7 AN	(25-31)
ORC A055	3 AN	(25-27)
FILLER	4 AN	(28-31)
DIC 3920 FROM SSR	3 AN	32-34
END-ITM-NSN A752	13 AN	35-47
DT-NSN-RQD A753	3 P	48-50
(Blank Field)	1 AN	51

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
DT-RPR-PART-RQD A754	3 P	52-54
DEL-IND A006	1 AN	55
CONTR-CTL-NO A703	20 AN	56-75
WPN-SYS-DES A473	2 AN	76-77
MAINT-LVL-CD A732	2 AN	78-79
FSCM 9250 (PRIME)	5 AN	80-84
SPACE	2 AN	85-86
ESNTLT-CD A705	1 AN	87
RIC A030	3 AN	88-90
TY-LOG-REASGM-CD A706	1 AN	91
(Blank Field)	1 AN	92
PCT-ENDITEM-EAST A761	2 P	93-94
CRD-NO 3805	1 AN	95
TY-CHN-CD A736	1 AN	96
ORIG-NSN-PSCN A739	13 AN	97-109
REPLM-NSN-PSCN 8878	13 AN	110-122
RETL-QTY A762	3 P	123-125
IMC 2744	1 AN	126
ACQUIS-ADV-CD 2507	1 AN	127
RPLN-QTY A735	3 P	128-130
SVC-CD A085 (LIM)	1 AN	131
ACTY-CD-LIM A047	2 AN	132-133
SRC-CD A747	2 AN	134-135
UI 3050	2 AN	136-137

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
(Blank Field)	1 AN	138
DMIL-CD 0167	1 AN	139
MTHD-PCMT-CD 2871	1 AN	140
SPACE	2 AN	141-142
SHLF-LIFE-CD 2943	1 AN	143
PDLT A051	2 AN	144-145
STD-UP 7075	4 P	146-149
SPACE	1 AN	150
CXB2 DATA	83 AN	151-233
FSCM 9250 (ORIG)	5 AN	(151-155)
REFNO-LOG 3570	32 AN	(156-187)
REPLM-FSCM-CD 3595	5 AN	(188-192)
REPLM-REFNO A776	32 AN	(193-224)
REFNO-FMT-CD 2920	1 AN	(225)
REFNO-CTGY-CD 2910	1 AN	(226)
REFNO-VARN-CD 4780	1 AN	(227)
DOC-AVAIL-CD 2640	1 AN	(228)
TECH-DATA-DT A710	3 P	(229-231)
TECH-DATA-JUSTN-CD A711	1 AN	(232)
REFNO-JUSTN-CD A712	1 AN	(233)
CXF DATA	51 AN	234-284
ITM-NAME 5000	47 AN	(234-280)
FSC 3990	4 AN	(281-284)
CXK DATA	21 AN	285-305
SVC-CD A085	1 AN	(285)
ACTY-CD-USER A775	2 AN	(286-287)
SVC-CD A085	1 AN	(288)
ACTY-CD-USER A775	2 AN	(289-290)
SVC-CD A085	1 AN	(291)
ACTY-CD-USER A775	2 AN	(292-293)
SVC-CD A085	1 AN	(294)
ACTY-CD-USER A775	2 AN	(295-296)
SVC-CD A085	1 AN	(297)
ACTY-CD-USER A775	2 AN	(298-299)
SVC-CD A085	1 AN	(300)
ACTY-CD-USER A775	2 AN	(301-302)
SVC-CD A085	1 AN	(303)
ACTY-CD-USER A775	2 AN	(304-305)

DATA ELEMENT	FIELD DEFINITION	POSITION IN RECORD
ACTN-TKN-CD A748	2 AN	306-307
GENERATED DATES	21 P	308-328
SUBM-DT A064	3 P	(308-310)
FYL-MAINT-DT A713	3 P	(311-313)
RCD-DROP-DT A714	3 P	(314-316)
FUP-DT-30-DAYS A715	3 P	(317-319)
FUP-DT-45-DAYS A716	3 P	(320-322)
FUP-DT-60-DAYS A717	3 P	(323-325)
SPT-DT-YX A718	3 P	(326-328)
INDICATORS	19 AN	329-347
SVC-CD A085	1 AN	(329)
COND-CD 2610	1 AN	(330)
DLSC-IND A443	1 AN	(331)
SSC-CHN-IND A719	1 AN	(332)
RPT-IND-F217 A783	1 AN	(333)
FYL-MAINT-CD A059	2 AN	(334-335)
FM1	1 AN	(334)
FM2	1 AN	(335)
ROUTG-IND-ZRP-IMC A721	1 AN	(336)
ADV-SENT-IND A722	1 AN	(337)
PARTNO-IND A723	1 AN	(338)
NSN-RQST-IND A724	1 AN	(339)
DIC-RCVD-IND-YDR A725	1 AN	(340)
TENTV-DIC-IND-YX A726	1 AN	(341)
DIC-RCVD-IND-KNA A727	1 AN	(342)
INTRGN-IND-ORIG A729	1 AN	(343)
ACQUIS-ADV-CD A159	1 AN	(344)
RPT-IND-F458 A700	1 AN	(345)
RPT-IND-F205 A701	1 AN	(346)
INTRGN-IND-DLSC A721	1 AN	(347)
ADV-CD-INTRM	2 AN	348-349
(Blank Field)	11 AN	350-360

APPENDIX C


IBM 360 STORAGE LAYOUT
(BYTES)
SYSTEM
FILE NAME USD?.?ORI
DATE LAST CHANGE 9 Aug 84
ANALYST/PROGRAMMER BAKER
DSC
National Stock Number
FMLY MEMB CD
FAMILY MEMBER NUMBER
ITEM NAME
OUTPUT ROUTING COD
UNIT OF ISSUE
SUP STATUS CD
FUTURE SSC
ARMY USER
AIR FORCE USER
MARINE USER
NAVY USER
OTHER USER
STANDARD UNIT PRICE
Standard Unit Price
UNIT WEIGHT
UNIT CUBE
BACK ORDER LINES
DUE IN LINES
CATALOG CHANGE CD
DEMAND VALUE
FORECAST BASIS
HAZARDOUS STOR COMPAT. CD
AGE ITEM CD
ITEM CAT CD
ITEM ESSENT CD
METH COMP
MOBL RESERVE
PECULIAR MANAGEMENT CODES
Proc Cycle
Procurement Group Code
SAFETY LEVEL
SL ESSENT
SHELF LIFE CD
SPEC REQ CD
STD STAT CD
STORAGE
MISSION CD
TRACK SIG
TYPE CARGO
VIP
WTN SYS CD
WEAPON SYS INTEREST CD
ALPHA FACTOR
TRACKING SIGNAL COUNTER
ADMIN LEAD TIME DAYS
PRODUCTION LEAD TIME DAYS
OPERATING LEVEL MONTHS
PROCUR CYCLE MONTH
SAFETY LEVEL MONTHS
SHELF LIFE MONTHS
LESS THAN TRUCK LOAD
MANAGE ASSUME DATE
LAST BUY DATE
LAST DISPOSAL DATE
LAST DEM FIT
LAST DEMAND DATE (Cont.)
ATTLC NONRECUR DEM PCT
IPG 1 PERCENT
IPG 2 PERCENT
ADDITIONAL RETENTION QTY
AVERAGE REQN QTY
BACK ORDER QTY
DUE IN QTY
DOUBLE SMOOTH QTY
ISSUABLE ASSET QTY
MRQ
MAX RELEASE QUANTITY (Cont.)
MEAN ABSOLUTE DEVIATION
MIN PROCUR QTY
NORFOLK FILL QTY
NUMERIC STOCKAGE OBJECTIVE
OAKLAND FILL QTY
LEGEND:
P = PACK DECIMAL
Z = ZONE DECIMAL
B = BINARY
S = SIGN
COMMENTS:
LRECL = 600
BLKSIZE = 21000
RECFM = FB
ZONED DECIMAL FIELDS
SEQUENCED BY NSN

IBM 360 STORAGE LAYOUT
(BYTES)

SYSTEM ______

FILE NAME: UUUTCORI

DATE LAST CHANGE: 9 Aug 84

ANALYST/PROGRAMMER: BAKER

Bytes 1–60 (461–520):
- OAKLAND FILL QTY (CONT.)
- QUARTERLY FORECASTED DEMAND
- QUARTERLY FORECASTED DEMAND NEW
- QUARTERLY FORECASTED RETURN QTY
- REORDER POINT QTY
- SAFETY LEVEL QTY
- SINGLE SMOOTH QTY
- OWRMR QTY

Bytes 61–120:
- OWRMR QTY (CONT.)
- OWRMRP QTY
- UMMIPS LEVEL 1 QTY
- UMMIPS LEVEL 2 QTY
- ANNUAL DEMAND QTY
- ANNUAL DEMAND FREQ
- ANNUAL NONRECUR DEMAND QTY
- ANNUAL NONRECUR DEMAND FREQ

Bytes 121–180:
- ANDT CURT
- ANNUAL RECUR DEMAND QTY
- ANNUAL RECUR DEMAND FREQ
- ANNUAL RETURN QTY
- ANNUAL RETURN FREQ
- 1ST QTR NONRECUR DEMAND QTY
- 2ND QTR NONRECUR DEMAND QTY
- 3RD QTR NONRECUR DEMAND QTY

Bytes 181–240:
- 4TH QTR NON RECUR DEMAND QTY
- 1ST QTR NONRECUR DEMAND FREQ
- 2ND QTR NONRECUR DEMAND FREQ
- 3RD QTR NONRECUR DEMAND FREQ
- 4TH QTR NONRECUR DEMAND FREQ
- 1ST QTR RECUR DEMAND QTY
- 2ND QTR RECUR DEMAND QTY
- 3RD QTR RECUR DEMAND QTY
- 4TH QTR RECUR DEMAND QTY

Bytes 241–280 (521–560):
- 4TH QTR RETUR DEMAND QTY CONT
- 1ST QTR RETUR DEMAND FREQ
- 2ND QTR RECUR DEMAND FREQ
- 3RD QTR RECUR DEMAND FREQ
- 4TH QTR RECUR DEMAND FREQ
- FILLER FROM (546 - 600)

LEGEND:
- P = PACK DECIMAL
- Z = ZONE DECIMAL
- B = BINARY
- S = SIGN

COMMENTS:
- LRECL = 600
- BLKSIZE = 21000
- RECFM = FB
- ZONED DECIMAL FIELDS
- SEQUENCED BY NSN

RECORD LAYOUT

PROGRAM TITLE	PREPARED BY	DATE
Provisioning/Demand File		

PROGRAM NUMBER	FILE NAME	TYPE LABEL
	FLO.FJP.PROV.CMBYX	

RECORD TYPE (Check One)	LABEL	RECORD SIZE	BLOCKING FACTOR
☐ CARD ☐ TAPE ☒ DISK		246	18450

FIELD NAME/DESCRIPTION	NUMBER OF BYTES	FIELD LOCATION FROM	FIELD LOCATION TO	PICTURE	USAGE
Date of Request (DOR)	4	1	4	AN	
Established Date (ESDATE)	5	5	9	AN	
National Stock Number (NSN)	13	10	22	AN	
Date Repair Parts Required (DRPR)	5	23	27	AN	
Weapon System Designator (WSD)	1	28	28	AN	
Retail Quantity (RTLQTY)	5	29	33	AN	
Replenishment Quantity (REPLNQTY)	5	34	38	AN	
Aquisition Advice Code (AAC)	1	39	39	AN	
Service Code (SVC)	1	40	40	AN	
Defense Supply Center (DSC)	1	41	41	AN	
Supply Support Request Counter (SSRCTR)	2	42	43	AN	
Supply Status Code (SSC)	1	44	44	AN	
Unit Price (UP)	9	45	53	AN	
Age of Item Code (AIC)	1	54	54	AN	
Item Category Code (ICC)	1	55	55	AN	
Administrative Leadtime (ALT)	3	56	58	AN	
Production Leadtime (PLT)	3	59	61	AN	
Date Management Assumed (DMA)	5	62	66	AN	
Backorder Quantity (BOQTY)	9	67	75	AN	
Numeric Stockage Objective (NSO)	9	76	84	AN	
Quarterly Forecasted Demand (QFD)	9	85	93	AN	
Quarterly Forecasted Demand, New (QFDN)	9	94	102	AN	
Actual Demand Qty (ADQ832)	9	103	111	AN	

RECORD LAYOUT

PROGRAM TITLE	PREPARED BY	DATE
Provisioning/Demand File		

PROGRAM NUMBER	FILE NAME	TYPE LABEL
	FLO.FJP.PROV.CMBYX	

RECORD TYPE (Check One)	LABEL	RECORD SIZE	BLOCKING FACTOR
☐ CARD ☐ TAPE ☒ DISK		246	18450

FIELD NAME/DESCRIPTION	NUMBER OF BYTES	FIELD LOCATION FROM	FIELD LOCATION TO	PICTURE	USAGE
Actual Dmd Qty 83/3 (ADQ 833)	9	112	120		
Actual Dmd Qty 83/4 (ADQ834)	9	121	129		
" " " 84/1 (ADQ841)	9	130	138		
" " " 84/2	9	139	147		
" " " 84/3	9	148	156		
" " " 84/4	9	157	165		
" " " 85/1	9	166	174		
SSR Demand Qty 83/2 (SDQ832)	9	175	183		
" " " 83/3 (SDQ833)	9	184	192		
" " " 83/4 (SDQ834)	9	193	201		
" " " 84/1 (SDQ841)	9	202	210		
" " " 84/2 (SDQ842)	9	211	219		
" " " 84/3 (SDQ843)	9	220	228		
" " " 84/4 (SDQ844)	9	229	237		
" " " 85/1 (SDQ851)	9	238	246		

```
*************************************************
*                                               *
* FL06515                          85.071 14.44.56 *
* FLO.ARNETT.ASM                                *
* (PRO2)                                        *
*                                               *
*************************************************
```

```
//FL06515I JOB (6515,LO),'ARNETT',CLASS=A,MSGCLASS=X,
//       NOTIFY=FL06515
//STEP2   EXEC COBUCLG,REGION=300K,
//         PARM='SIZ=400K,SXR,BUF=50K,CNT=56'
//SYSIN     DD  *
        IDENTIFICATION DIVISION.
        PROGRAM-ID.    PROVIS.
        AUTHOR. CAPT. GARY ARNETT.
        INSTALLATION. DLA-LOO.
        DATE-WRITTEN. JAN 1985.
        DATE-COMPILED.
        SECURITY.    CLASSIFY.
        REMARKS.
        ENVIRONMENT DIVISION.
        CONFIGURATION SECTION.
        SOURCE-COMPUTER. IBM-SYS-3033.
        OBJECT-COMPUTER. IBM-SYS-3033.
        INPUT-OUTPUT SECTION.
        FILE-CONTROL.
            SELECT PCHF      ASSIGN TO UT-S-SYS010.
            SELECT NEW-PROV ASSIGN TO UT-S-SYS020.
        DATA DIVISION.

        FILE SECTION.


        FD  PCHF
            LABEL RECORDS STANDARD
            RECORDING MODE F
            RECORD CONTAINS 360 CHARACTERS
            BLOCK CONTAINS 0 CHARACTERS
            DATA RECORD IS SSR-REC.

        01  SSR-REC.
         05    ACTV-CD        PIC X(2).
         05    FILLER         PIC X(3).
         05    DOR            PIC X(4).
         05    FILLER         PIC X(42).
         05    DRPR           PIC 9(5)  COMP-3.
         05    FILLER         PIC X(21).
         05    WSD            PIC X(2).
         05    FILLER         PIC X(32).
         05    NSN            PIC X(13).
         05    RETL-QTY       PIC 9(5)  COMP-3.
         05    FILLER         PIC X.
         05    AAC            PIC X.
         05    REPLN-QTY      PIC 9(5)  COMP-3.
         05    FILLER         PIC X(175).
         05    ACT-CD         PIC X(2).
```

```
 05     FILLER          PIC X(21).
 05     SVC-CD          PIC X.
 05     FILLER          PIC X(31).
FD      NEW-PROV
    LABEL RECORDS ARE STANDARD
    RECORD CONTAINS 40 CHARACTERS
    DATA RECORD IS DATA-LN.
01    DATA-LN          PIC X(40).
WORKING-STORAGE SECTION.
01     CTR1      PIC 999999.
01     CTR2      PIC 999999.
01     NSNCTR    PIC 999999.
01     NSN-OLD   PIC X(13).
01     FIRST-DTE PIC X(4) VALUE '9999'.
01     EOF-SW    PIC X VALUE 'N'.
01     SSR-REC-OUT.
 05    DOR-O     PIC X(4).
 05    ACTV-CD-O PIC X(2).
 05    NSN-O     PIC X(13).
 05    DRPR-O    PIC X(5).
 05    WSD-O     PIC X(2).
 05    RETL-QTY-O    PIC X(5).
 05    REPLN-QTY-O   PIC X(5).
 05    ACT-CD-O      PIC X(2).
 05    AAC-O         PIC X.
 05    SVC-CD-O      PIC X.
PROCEDURE DIVISION.
000-MAIN.
    PERFORM 100-START.
    PERFORM 210-NSN-CHECK UNTIL EOF-SW = 'Y'.
    PERFORM 300-TERMINATE.
    STOP RUN.
100-START.
    OPEN INPUT PCHF.
    OPEN OUTPUT NEW-PROV.
    PERFORM 110-COUNTERS.
    READ PCHF AT END MOVE 'Y' TO EOF-SW.
    ADD 1 TO CTR1.
    MOVE NSN TO NSN-OLD.
110-COUNTERS.
    MOVE 0 TO CTR1.
    MOVE 0 TO CTR2.
    MOVE 0 TO NSNCTR.
210-NSN-CHECK.
 IF NSN IS NOT EQUAL NSN-OLD PERFORM 220-DATA-TRANSFER.
          ADD 1 TO NSNCTR
          IF DOR < FIRST-DTE
             MOVE DOR TO FIRST-DTE
             MOVE DOR TO DOR-O
             MOVE ACTV-CD TO ACTV-CD-O
             MOVE NSN TO NSN-O
             MOVE NSN TO NSN-OLD
             MOVE DRPR TO DRPR-O
             MOVE WSD TO WSD-O
             MOVE RETL-QTY TO RETL-QTY-O
             MOVE REPLN-QTY TO REPLN-QTY-O
```

```
                    MOVE AAC TO AAC-O
                    MOVE ACT-CD TO ACT-CD-O
                    MOVE SVC-CD TO SVC-CD-O.
            READ PCHF AT END MOVE 'Y' TO EOF-SW.
            ADD 1 TO CTR1.
        220-DATA-TRANSFER.
            WRITE DATA-LN FROM SSR-REC-OUT.
            ADD 1 TO CTR2.
            MOVE SPACES TO SSR-REC-OUT.
            MOVE 9999 TO FIRST-DTE.
            MOVE NSN TO NSN-OLD.
        300-TERMINATE.
            DISPLAY CTR1.
            DISPLAY CTR2.
            CLOSE PCHF NEW-PROV.
            STOP RUN.
/*
//GO.SYS010 DD DSN=FLO.ARNETT.PROV.I,UNIT=3350,DISP=OLD
//GO.SYS020 DD DSN=FLO.PROV.I,UNIT=3350,DISP=(NEW,CATLG,DELETE),
//           SPACE=(CYL,(50,10),RLSE),DCB=(RECFM=FB,LRECL=40,
//           BLKSIZE=19000),VOL=SER=FL0002
//GO.SYSOUT DD SYSOUT=*
//
```

```
*************************************************
*                                               *
* FL06515                      85.071 14.39.39  *
* FLO.ARNETT.COBOL                              *
* (PROV)                                        *
*                                               *
*************************************************
```

```
//FLOPROVI JOB (6512,LO),'FJP',CLASS=R,MSGCLASS=X,NOTIFY=FL06512
//*
//*      FRANK PENDER;ROOM 3B330;CAMERON STATION ALEXANDRIA;274-7227
//*
//*      THIS IS DATASET   FLO.ARNETT.COBOL(PROV)
//*
//*      THE JCL AND PROGRAM TO GENERATE A FILE OF PROVISIONING
//*      ITEMS WITH DATA ELEMENTS FROM THE PROVISIONING HISTORY FILE
//*      AND THE MARS ITEM DATA FILE. FOR USE IN A PROVISIONING STUDY.
//*
//STEP1    EXEC COBUCLG,REGION=800K,PARM='SIZ=800K,SXR,CNT=56'
//SYSUDUMP DD SYSOUT=*
//SYSIN      DD   *
        IDENTIFICATION  DIVISION.
        PROGRAM-ID.     PROVIS01.
        AUTHOR.         FRANK J. PENDER.
        INSTALLATION.   DLA-LOO.
        DATE-WRITTEN.   JAN 1985.
        DATE-COMPILED.
        SECURITY.       EYES.
        REMARKS.        THIS PROGRAM SELECTS CERTAIN ITEMS FROM THE
                        PROVISION HISTORY FILE AND MARS DATA FILE BASED
                        ON CRITERIA FROM GARY ARNETT.
        ENVIRONMENT     DIVISION.
        CONFIGURATION   SECTION.
        SOURCE-COMPUTER.
        OBJECT-COMPUTER.
        INPUT-OUTPUT    SECTION.
        FILE-CONTROL.
            SELECT PROVFILE ASSIGN TO UT-S-SYS010.
            SELECT IMARS    ASSIGN TO UT-S-SYS020.
            SELECT OUTFILE  ASSIGN TO UT-S-SYS030.
      *     SELECT WORKFILE ASSIGN TO UT-S-SYS040.
        DATA            DIVISION.
        FILE            SECTION.
        FD  PROVFILE
            LABEL RECORDS ARE STANDARD
            RECORDING MODE IS F
            BLOCK CONTAINS 0 RECORDS
            DATA RECORD IS PROVREC.
        01  PROVREC.
          03  PATV             PIC X(2).
          03  PDOR             PIC X(4).
          03  PNSN             PIC X(13).
          03  PDRPR            PIC X(5).
          03  PWSD             PIC X(2).
          03  PRTAIL           PIC 9(5).
          03  PRPLEN           PIC 9(5).
          03  PAAC             PIC X.
```

```
  03  PATN                PIC X(2).
  03  PSVC                PIC X.
FD  IMARS
    LABEL RECORDS ARE STANDARD
    RECORDING MODE IS F
    BLOCK CONTAINS 0 RECORDS
    DATA RECORD IS IMARSREC.
01  IMARSREC.
  03  IDSC                PIC X.
  03  INSN                PIC X(13).
  03  FILLER              PIC X(33).
  03  ISSC                PIC X.
  03  FILLER              PIC X(6).
  03  IUPR                PIC X(9).
  03  FILLER              PIC X(34).
  03  IAIC                PIC X.
  03  IICC                PIC X.
  03  FILLER              PIC X(46).
  03  IALT                PIC X(3).
  03  IPLT                PIC X(3).
  03  FILLER              PIC X(13).
  03  IDMA                PIC X(5).
  03  FILLER              PIC X(34).
  03  IBOQ                PIC X(9).
  03  FILLER              PIC X(57).
  03  INSOQ               PIC X(9).
  03  FILLER              PIC X(7).
  03  IQFD                PIC X(9).
  03  IQFDN               PIC X(9).
  03  FILLER              PIC X(130).
  03  INDQ1               PIC 9(9).
  03  INDQ2               PIC 9(9).
  03  INDQ3               PIC 9(9).
  03  INDQ4               PIC 9(9).
  03  FILLER              PIC X(20).
  03  IRDQ1               PIC 9(9).
  03  IRDQ2               PIC 9(9).
  03  IRDQ3               PIC 9(9).
  03  IRDQ4               PIC 9(9).
  03  FILLER              PIC X(75).
FD  OUTFILE
    LABEL RECORDS ARE STANDARD
    RECORDING MODE IS F
    BLOCK CONTAINS 0 RECORDS
    DATA RECORD IS OUTFILEREC.
01  OUTFILEREC SYNC.
  03  OPROVREC            PIC X(40).
  03  ODSC                PIC X.
  03  OIND                PIC X(2).
  03  OSSC                PIC X.
  03  OUPR                PIC X(9).
  03  OICC                PIC X.
  03  OAIC                PIC X.
  03  OALT                PIC X(3).
  03  OPLT                PIC X(3).
  03  ODMA                PIC X(5).
```

```
           03  OBOQ                PIC X(9).
           03  ONSOQ               PIC X(9).
           03  OQFD                PIC X(9).
           03  OQFDN               PIC X(9).
           03  ODQ832              PIC 9(9).
           03  ODQ833              PIC 9(9).
           03  ODQ834              PIC 9(9).
           03  ODQ841              PIC 9(9).
           03  ODQ842              PIC 9(9).
           03  ODQ843              PIC 9(9).
           03  ODQ844              PIC 9(9).
           03  ODQ851              PIC 9(9).
           03  OPQ832              PIC 9(9).
           03  OPQ833              PIC 9(9).
           03  OPQ834              PIC 9(9).
           03  OPQ841              PIC 9(9).
           03  OPQ842              PIC 9(9).
           03  OPQ843              PIC 9(9).
           03  OPQ844              PIC 9(9).
           03  OPQ851              PIC 9(9).
       *FD  WORKFILE
       *    LABEL RECORDS ARE STANDARD
       *    RECORDING MODE IS F
       *    BLOCK CONTAINS 0 RECORDS
       *    DATA RECORD IS WORKFILEREC.
       *01  WORKFILEREC.
       *   03  FILLER              PIC X(9).
       *   03  WNSN                PIC X(13).
       *   03  FILLER              PIC X(80).
       *   03  FILLER              PIC X(36).
       *   03  WDQ842              PIC 9(9).
       *   03  WDQ843              PIC 9(9).
       *   03  WDQ844              PIC 9(9).
       *   03  WDQ851              PIC 9(9).
       *   03  FILLER              PIC X(72).
        WORKING-STORAGE SECTION.
        01  DUM-HEAD               PIC X(15) VALUE 'BEGIN WORK STOR'.
        01  CTRS    SYNC.
           03  CTR1                PIC 9(6) COMP VALUE ZEROES.
           03  CTR2                PIC 9(6) COMP VALUE ZEROES.
           03  CTR3                PIC 9(6) COMP VALUE ZEROES.
           03  CTR4                PIC 9(6) COMP VALUE ZEROES.
           03  CTR5                PIC 9(6) COMP VALUE ZEROES.
           03  CTR6                PIC 9(6) COMP VALUE ZEROES.
           03  CTR7                PIC 9(6) COMP VALUE ZEROES.
           03  CTR8                PIC 9(6) COMP VALUE ZEROES.
           03  CTR9                PIC 9(6) COMP VALUE ZEROES.
           03  CTR10               PIC 9(6) COMP VALUE ZEROES.
        01  IND                    PIC 9(4)      VALUE ZEROES.
        01  PRATE                  PIC 9(5)      VALUE ZEROES.
        01  PNSNH                  PIC X(13)     VALUE SPACE.
        01  PRQTY                  PIC 9(8)      VALUE ZEROES.
        PROCEDURE DIVISION.
        BEGIN-PROG.
            OPEN INPUT   PROVFILE.
            OPEN INPUT   IMARS.
```

```
*    OPEN INPUT   WORKFILE.
     OPEN OUTPUT  OUTFILE.
     MOVE 00000 TO OUTFILEREC.
 DQLVL.
     MOVE 000000000 TO ODQ832.
     MOVE 000000000 TO ODQ833.
     MOVE 000000000 TO ODQ834.
     MOVE 000000000 TO ODQ841.
     MOVE 000000000 TO ODQ842.
     MOVE 000000000 TO ODQ843.
     MOVE 000000000 TO ODQ844.
     MOVE 000000000 TO ODQ851.
     MOVE 000000000 TO OPQ832.
     MOVE 000000000 TO OPQ833.
     MOVE 000000000 TO OPQ834.
     MOVE 000000000 TO OPQ841.
     MOVE 000000000 TO OPQ842.
     MOVE 000000000 TO OPQ843.
     MOVE 000000000 TO OPQ844.
     MOVE 000000000 TO OPQ851.
 READPROV.
     READ PROVFILE AT END MOVE '9999999999999' TO PNSN.
     IF PNSN NOT NUMERIC ADD 1 TO CTR9 GO TO READPROV.
     ADD 1 TO CTR1.
     IF CTR1  =  1  MOVE PNSN TO PNSNH.
 PROVMATCH.
     IF PNSNH NOT  = PNSN  GO TO MARSMATCH.
     IF PDRPR      <  83001  GO TO READPROV.
     IF PDRPR      >  84365  GO TO READPROV.
     ADD 1 TO IND.
     IF IND  >  001  GO TO READPROV.
     ADD 1 TO CTR6.
     MOVE PROVREC TO OPROVREC.
     COMPUTE PRATE = PRPLEN * .25 + .5.
     COMPUTE PRQTY = PRATE  +  PRTAIL.
     IF PDRPR < 83091 COMPUTE OPQ832 = OPQ832 + PRQTY GO TO QTR3.
     IF PDRPR < 83181 COMPUTE OPQ833 = OPQ833 + PRQTY GO TO QTR4.
     IF PDRPR < 83271 COMPUTE OPQ834 = OPQ834 + PRQTY GO TO QTR5.
     IF PDRPR < 83365 COMPUTE OPQ841 = OPQ841 + PRQTY GO TO QTR6.
     IF PDRPR < 84091 COMPUTE OPQ842 = OPQ842 + PRQTY GO TO QTR7.
     IF PDRPR < 84181 COMPUTE OPQ843 = OPQ843 + PRQTY GO TO QTR8.
     IF PDRPR < 84271 COMPUTE OPQ844 = OPQ844 + PRQTY GO TO QTR9.
     IF PDRPR < 84365 COMPUTE OPQ851 = OPQ851 + PRQTY GO TO QTR10.
 QTR3.  COMPUTE OPQ833 = OPQ833 + PRATE.
 QTR4.  COMPUTE OPQ834 = OPQ834 + PRATE.
 QTR5.  COMPUTE OPQ841 = OPQ841 + PRATE.
 QTR6.  COMPUTE OPQ842 = OPQ842 + PRATE.
 QTR7.  COMPUTE OPQ843 = OPQ843 + PRATE.
 QTR8.  COMPUTE OPQ844 = OPQ844 + PRATE.
 QTR9.  COMPUTE OPQ851 = OPQ851 + PRATE.
 QTR10.
     GO TO READPROV.
 MARSMATCH.
     IF IND   < 001   ADD 1 TO CTR7  GO TO RESETPROV.
     IF PNSNH < INSN  GO TO RESETPROV.
     IF PNSNH > INSN  GO TO READIMARS.
```

```
           MOVE IND      TO OIND.
           MOVE IDSC     TO ODSC.
           MOVE ISSC     TO OSSC.
           MOVE IUPR     TO OUPR.
           MOVE IICC     TO OICC.
           MOVE IAIC     TO OAIC.
           MOVE IALT     TO OALT.
           MOVE IFLT     TO OFLT.
           MOVE IDMA     TO ODMA.
           MOVE IBOQ     TO OBOQ.
           MOVE INSOQ    TO ONSOQ.
           MOVE IQFD     TO OQFD.
           MOVE IQFDN    TO OQFDN.
           COMPUTE ODQ832 = INDQ4 + IRDQ4.
           COMPUTE ODQ833 = INDQ3 + IRDQ3.
           COMPUTE ODQ834 = INDQ2 + IRDQ2.
           COMPUTE ODQ841 = INDQ1 + IRDQ1.
           WRITE OUTFILEREC.
           ADD 1 TO CTR2.
       READIMARS.
           READ IMARS AT END GO TO EOJ.
           IF IDMA < 83001 GO TO READIMARS.
           IF IAIC = 'N' NEXT SENTENCE ELSE GO TO READIMARS.
           ADD 1 TO CTR3.
           GO TO MARSMATCH.
       RESETPROV.
           MOVE PNSN TO PNSNH.
           ADD  IND TO CTR8.
           MOVE 0000 TO IND.
           MOVE 00000 TO OUTFILEREC.
           PERFORM DQLVL.
           IF PNSN  =  '9999999999999'  GO TO EOJ.
           GO TO PROVMATCH.
      *WORKMATCH.
      *    IF INSN < WNSN  GO TO READIMARS.
      *    IF INSN > WNSN  GO TO READWORKFILE.
      *    COMPUTE WDQ842 = INDQ4 + IRDQ4.
      *    COMPUTE WDQ843 = INDQ3 + IRDQ3.
      *    COMPUTE WDQ844 = INDQ2 + IRDQ2.
      *    COMPUTE WDQ851 = INDQ1 + IRDQ1.
      *    MOVE WORKFILEREC TO OUTFILEREC.
      *    WRITE OUTFILEREC.
      *    ADD 1 TO CTR4.
      *READWORKFILE.
      *    READ WORKFILE AT END GO TO EOJ.
      *    ADD 1 TO CTR5.
      *    GO TO WORKMATCH.
       EOJ.
           DISPLAY 'PROVFILE INPUT  ' CTR1.
           DISPLAY 'OUTFILE  OUTPUT ' CTR2.
           DISPLAY 'IMARS    INPUT  ' CTR3.
           DISPLAY 'OUTFILE2 OUTPUT ' CTR4.
           DISPLAY 'WORKFILE INPUT  ' CTR5.
           DISPLAY 'VALID PROV RECS ' CTR6.
           DISPLAY 'INVAL PROV RECS ' CTR7.
           DISPLAY 'TOTL NBR SSRS   ' CTR8.
```

```
            DISPLAY 'INVAL NSN FIELD ' CTR9.
            CLOSE PROVFILE.
            CLOSE IMARS.
            CLOSE OUTFILE.
      *     CLOSE WORKFILE.
            STOP RUN.
/*
//GO.SYS010 DD DSN=FLO.FJP.SORT.PROVRECI,DISP=OLD,UNIT=3350
//GO.SYS020 DD DSN=GOR.ITEM841.I,DISP=OLD,UNIT=TAPE
//GO.SYS030 DD DSN=FLO.FJP.PROV.CMB3I,DISP=(NEW,CATLG,DELETE),
//             DCB=(RECFM=FB,LRECL=246,BLKSIZE=18450),
//             UNIT=3350,SPACE=(TRK,(2000,50),RLSE),VOL=SER=FL0001
//GO.SYSOUT DD SYSOUT=*
/*
//
```

```
************************************************
*                                              *
* FL06515                      85.071 14.40.29 *
* FLO.ARNETT.COBOL                             *
* (PROX)                                       *
*                                              *
************************************************
```

```
//FLOPROXI JOB (6512,LO),'FJP',CLASS=R,MSGCLASS=X,NOTIFY=FL06515
//*
//*     FRANK PENDER;ROOM 3B330;CAMERON STATION ALEXANDRIA;274-7227
//*
//*     THIS IS DATASET   FLO.ARNETT.COBOL(PROX)
//*
//*     THE JCL AND PROGRAM TO GENERATE A FILE OF PROVISIONING
//*     ITEMS WITH DATA ELEMENTS FROM THE PROVISIONING HISTORY FILE
//*     AND THE MARS ITEM DATA FILE. FOR USE IN A PROVISIONING STUDY.
//*
//STEP1   EXEC COBUCLG,REGION=800K,PARM='SIZ=800K,SXR,CNT=56'
//SYSUDUMP DD SYSOUT=*
//SYSIN      DD   *
       IDENTIFICATION  DIVISION.
       PROGRAM-ID.     PROVIS02.
       AUTHOR.         FRANK J. PENDER.
       INSTALLATION.   DLA-LOO.
       DATE-WRITTEN.   JAN 1985.
       DATE-COMPILED.
       SECURITY.       EYES.
       REMARKS.        THIS PROGRAM SELECTS CERTAIN ITEMS FROM THE
                       PROVISION HISTORY FILE AND MARS DATA FILE BASED
                       ON CRITERIA FROM GARY ARNETT.
       ENVIRONMENT     DIVISION.
       CONFIGURATION   SECTION.
       SOURCE-COMPUTER.
       OBJECT-COMPUTER.
       INPUT-OUTPUT    SECTION.
       FILE-CONTROL.
           SELECT PROVFILE ASSIGN TO UT-S-SYS010.
           SELECT IMARS    ASSIGN TO UT-S-SYS020.
           SELECT OUTFILE  ASSIGN TO UT-S-SYS030.
           SELECT WORKFILE ASSIGN TO UT-S-SYS040.
       DATA            DIVISION.
       FILE            SECTION.
       FD  PROVFILE
           LABEL RECORDS ARE STANDARD
           RECORDING MODE IS F
           BLOCK CONTAINS 0 RECORDS
           DATA RECORD IS PROVREC.
       01  PROVREC.
         03  PDOR             PIC X(4).
         03  PESDAT           PIC X(5).
         03  PNSN             PIC X(13).
         03  PDRPR            PIC X(5).
         03  PWSD             PIC X.
         03  PRTAIL          PIC 9(5).
         03  PRPLEN          PIC 9(5).
         03  PAAC             PIC X.
```

```
  03  PSVC                PIC X.
FD  IMARS
    LABEL RECORDS ARE STANDARD
    RECORDING MODE IS F
    BLOCK CONTAINS 0 RECORDS
    DATA RECORD IS IMARSREC.
01  IMARSREC.
  03  IDSC                PIC X.
  03  INSN                PIC X(13).
  03  FILLER              PIC X(33).
  03  ISSC                PIC X.
  03  FILLER              PIC X(6).
  03  IUPR                PIC X(9).
  03  FILLER              PIC X(35).
  03  IICC                PIC X.
  03  FILLER              PIC X(46).
  03  IALT                PIC X(3).
  03  IPLT                PIC X(3).
  03  FILLER              PIC X(13).
  03  IDMA                PIC X(5).
  03  FILLER              PIC X(34).
  03  IBOQ                PIC X(9).
  03  FILLER              PIC X(57).
  03  INSOQ               PIC X(9).
  03  FILLER              PIC X(7).
  03  IQFD                PIC X(9).
  03  IQFDN               PIC X(9).
  03  FILLER              PIC X(130).
  03  INDQ1               PIC 9(9).
  03  INDQ2               PIC 9(9).
  03  INDQ3               PIC 9(9).
  03  INDQ4               PIC 9(9).
  03  FILLER              PIC X(20).
  03  IRDQ1               PIC 9(9).
  03  IRDQ2               PIC 9(9).
  03  IRDQ3               PIC 9(9).
  03  IRDQ4               PIC 9(9).
  03  FILLER              PIC X(75).
FD  OUTFILE
    LABEL RECORDS ARE STANDARD
    RECORDING MODE IS F
    BLOCK CONTAINS 0 RECORDS
    DATA RECORD IS OUTFILEREC.
01  OUTFILEREC SYNC.
  03  OPROVREC            PIC X(40).
  03  ODSC                PIC X.
  03  OIND                PIC X(2).
  03  OSSC                PIC X.
  03  OUPR                PIC X(9).
  03  OAIC                PIC X.
  03  OICC                PIC X.
  03  OALT                PIC X(3).
  03  OFLT                PIC X(3).
  03  ODMA                PIC X(5).
  03  OBOQ                PIC X(9).
  03  ONSOQ               PIC X(9).
```

```
  03  OQFD              PIC X(9).
  03  OQFDN             PIC X(9).
  03  ODQ832            PIC 9(9).
  03  ODQ833            PIC 9(9).
  03  ODQ834            PIC 9(9).
  03  ODQ841            PIC 9(9).
  03  ODQ842            PIC 9(9).
  03  ODQ843            PIC 9(9).
  03  ODQ844            PIC 9(9).
  03  ODQ851            PIC 9(9).
  03  OPQ832            PIC 9(9).
  03  OPQ833            PIC 9(9).
  03  OPQ834            PIC 9(9).
  03  OPQ841            PIC 9(9).
  03  OPQ842            PIC 9(9).
  03  OPQ843            PIC 9(9).
  03  OPQ844            PIC 9(9).
  03  OPQ851            PIC 9(9).
FD  WORKFILE
    LABEL RECORDS ARE STANDARD
    RECORDING MODE IS F
    BLOCK CONTAINS 0 RECORDS
    DATA RECORD IS WORKFILEREC.
01  WORKFILEREC.
  03  FILLER            PIC X(6).
  03  WNSN              PIC X(13).
  03  FILLER            PIC X(83).
  03  FILLER            PIC X(36).
  03  WDQ842            PIC 9(9).
  03  WDQ843            PIC 9(9).
  03  WDQ844            PIC 9(9).
  03  WDQ851            PIC 9(9).
  03  FILLER            PIC X(72).
WORKING-STORAGE SECTION.
01  DUM-HEAD            PIC X(15) VALUE 'BEGIN WORK STOR'.
01  CTRS    SYNC.
  03  CTR1              PIC 9(6) COMP VALUE ZEROES.
  03  CTR2              PIC 9(6) COMP VALUE ZEROES.
  03  CTR3              PIC 9(6) COMP VALUE ZEROES.
  03  CTR4              PIC 9(6) COMP VALUE ZEROES.
  03  CTR5              PIC 9(6) COMP VALUE ZEROES.
  03  CTR6              PIC 9(6) COMP VALUE ZEROES.
  03  CTR7              PIC 9(6) COMP VALUE ZEROES.
  03  CTR8              PIC 9(6) COMP VALUE ZEROES.
  03  CTR9              PIC 9(6) COMP VALUE ZEROES.
  03  CTR10             PIC 9(6) COMP VALUE ZEROES.
01  IND                 PIC 9(3)      VALUE ZEROES.
01  PRATE               PIC 9(5)      VALUE ZEROES.
01  PNSNH               PIC X(13)     VALUE SPACE.
01  PRQTY               PIC 9(8)      VALUE ZEROES.
PROCEDURE DIVISION.
BEGIN-PROG.
    OPEN INPUT   PROVFILE.
    OPEN INPUT   IMARS.
    OPEN INPUT   WORKFILE.
    OPEN OUTPUT  OUTFILE.
```

```
    MOVE 00000 TO OUTFILEREC.
DQLVL.
    MOVE 000000000 TO ODQ832.
    MOVE 000000000 TO ODQ833.
    MOVE 000000000 TO ODQ834.
    MOVE 000000000 TO ODQ841.
    MOVE 000000000 TO ODQ842.
    MOVE 000000000 TO ODQ843.
    MOVE 000000000 TO ODQ844.
    MOVE 000000000 TO ODQ851.
    MOVE 000000000 TO OPQ832.
    MOVE 000000000 TO OPQ833.
    MOVE 000000000 TO OPQ834.
    MOVE 000000000 TO OPQ841.
    MOVE 000000000 TO OPQ842.
    MOVE 000000000 TO OPQ843.
    MOVE 000000000 TO OPQ844.
    MOVE 000000000 TO OPQ851.
ENDQLVL.
    GO TO READWORKFILE.
READPROV.
    READ PROVFILE AT END GO TO EOJ.
    IF PNSN NOT NUMERIC ADD 1 TO CTR9 GO TO READPROV.
    ADD 1 TO CTR1.
    IF CTR1  =  1  MOVE PNSN TO PNSNH.
PROVMATCH.
    IF PNSNH NOT  = PNSN  GO TO MARSMATCH.
    IF PDRPR      <  83001  GO TO READPROV.
    IF PDRPR      >  84365  GO TO READPROV.
    ADD 1 TO IND.
    ADD 1 TO CTR6.
    MOVE PROVREC TO OPROVREC.
    COMPUTE PRATE = PRPLEN * .25 + .5.
    COMPUTE PRQTY = PRATE  +  PRTAIL.
    IF PDRPR < 83091 COMPUTE OPQ832 = OPQ832 + PRQTY GO TO QTR3.
    IF PDRPR < 83181 COMPUTE OPQ833 = OPQ833 + PRQTY GO TO QTR4.
    IF PDRPR < 83271 COMPUTE OPQ834 = OPQ834 + PRQTY GO TO QTR5.
    IF PDRPR < 83365 COMPUTE OPQ841 = OPQ841 + PRQTY GO TO QTR6.
    IF PDRPR < 84091 COMPUTE OPQ842 = OPQ842 + PRQTY GO TO QTR7.
    IF PDRPR < 84181 COMPUTE OPQ843 = OPQ843 + PRQTY GO TO QTR8.
    IF PDRPR < 84271 COMPUTE OPQ844 = OPQ844 + PRQTY GO TO QTR9.
    IF PDRPR < 84365 COMPUTE OPQ851 = OPQ851 + PRQTY GO TO QTR10.
QTR3.  COMPUTE OPQ833 = OPQ833 + PRATE.
QTR4.  COMPUTE OPQ834 = OPQ834 + PRATE.
QTR5.  COMPUTE OPQ841 = OPQ841 + PRATE.
QTR6.  COMPUTE OPQ842 = OPQ842 + PRATE.
QTR7.  COMPUTE OPQ843 = OPQ843 + PRATE.
QTR8.  COMPUTE OPQ844 = OPQ844 + PRATE.
QTR9.  COMPUTE OPQ851 = OPQ851 + PRATE.
QTR10.
    GO TO READPROV.
MARSMATCH.
    IF IND   < 001   ADD 1 TO CTR7  GO TO RESETPROV.
    IF PNSNH < INSN  GO TO RESETPROV.
    IF PNSNH > INSN  GO TO READIMARS.
    MOVE IND     TO OIND.
```

```
           MOVE IDSC     TO ODSC.
           MOVE ISSC     TO OSSC.
           MOVE IUPR     TO OUPR.
           MOVE IICC     TO OICC.
           MOVE IALT     TO OALT.
           MOVE IPLT     TO OPLT.
           MOVE IDMA     TO ODMA.
           MOVE IBOQ     TO OBOQ.
           MOVE INSOQ    TO ONSOQ.
           MOVE IQFD     TO OQFD.
           MOVE IQFDN    TO OQFDN.
           COMPUTE ODQ832 = INDQ4 + IRDQ4.
           COMPUTE ODQ833 = INDQ3 + IRDQ3.
           COMPUTE ODQ834 = INDQ2 + IRDQ2.
           COMPUTE ODQ841 = INDQ1 + IRDQ1.
           WRITE OUTFILEREC.
           ADD 1 TO CTR2.
       READIMARS.
           READ IMARS AT END GO TO EOJ.
           ADD 1 TO CTR3.
           GO TO WORKMATCH.
       RESETPROV.
           MOVE PNSN TO PNSNH.
           ADD  IND TO CTR8.
           MOVE 000 TO IND.
           MOVE 00000 TO OUTFILEREC.
           PERFORM DQLVL.
           GO TO PROVMATCH.
       WORKMATCH.
           IF INSN < WNSN  GO TO READIMARS.
           IF INSN > WNSN  GO TO READWORKFILE.
           COMPUTE WDQ842 = INDQ4 + IRDQ4.
           COMPUTE WDQ843 = INDQ3 + IRDQ3.
           COMPUTE WDQ844 = INDQ2 + IRDQ2.
           COMPUTE WDQ851 = INDQ1 + IRDQ1.
           MOVE WORKFILEREC TO OUTFILEREC.
           WRITE OUTFILEREC.
           ADD 1 TO CTR4.
       READWORKFILE.
           READ WORKFILE AT END GO TO EOJ.
           ADD 1 TO CTR5.
           GO TO WORKMATCH.
       EOJ.
           DISPLAY 'PROVFILE INPUT   ' CTR1.
           DISPLAY 'OUTFILE  OUTPUT  ' CTR2.
           DISPLAY 'IMARS    INPUT   ' CTR3.
           DISPLAY 'OUTFILE2 OUTPUT  ' CTR4.
           DISPLAY 'WORKFILE INPUT   ' CTR5.
           DISPLAY 'VALID PROV RECS  ' CTR6.
           DISPLAY 'INVAL PROV RECS  ' CTR7.
           DISPLAY 'TOTL NBR SSRS    ' CTR8.
           DISPLAY 'INVAL NSN FIELD  ' CTR9.
           CLOSE PROVFILE.
           CLOSE IMARS.
           CLOSE OUTFILE.
           CLOSE WORKFILE.
```

```
           STOP RUN.
/*
//GO.SYS010 DD DUMMY,DSN=FLO.FJP.SORT.PROVRECI,DISP=OLD
//GO.SYS020 DD DSN=GOR.ITEM851.I,DISP=OLD,UNIT=TAPE
//GO.SYS030 DD DSN=FLO.FJP.PROV.CMB4I,DISP=(NEW,CATLG,DELETE),
//             DCB=(RECFM=FB,LRECL=246,BLKSIZE=18450),
//             UNIT=3350,SPACE=(TRK,(1500,100),RLSE),VOL=SER=FL0001
//GO.SYS040 DD DSN=FLO.FJP.PROV.CMB3I,DISP=OLD
//GO.SYSOUT DD SYSOUT=*
/*
//
```

```
*****************************************************
*                                                   *
* FLO6515                          85.071 14.39.01  *
* FLO.ARNETT.SAS                                    *
* (PROV)                                            *
*                                                   *
*****************************************************
```

```
//FLO6515E JOB (6515,LO),'ARNETT',CLASS=A,MSGCLASS=X,
//    NOTIFY=FLO6515
// EXEC SAS
//DATAIN DD DSN=FLO.FJP.PROV.CMB4E,DISP=OLD
//SYSIN DD *
DATA STATS;
 INFILE DATAIN;
 INPUT ADQ832 103-111 ADQ833 112-120 ADQ834 121-129 ADQ841 130-138
 ADQ842 139-147 ADQ843 148-156 ADQ844 157-165 ADQ851 166-174
 SDQ832 175-183 SDQ833 184-192 SDQ834 193-201 SDQ841 202-210
 SDQ842 211-219 SDQ843 220-228 SDQ844 229-237 SDQ851 238-246;
PROC MEANS SUM;
PROC CORR;
RUN;
```

APPENDIX F

DGSC Initial SSRs

SAS

VARIABLE	SUM
ADQ832	668.000000
ADQ833	2431.000000
ADQ834	16852.000000
ADQ841	18258.000000
ADQ842	59889.000000
ADQ843	76518.000000
ADQ844	108037.000000
ADQ851	133685.000000
SDQ832	7558.000000
SDQ833	43286.000000
SDQ834	74187.000000
SDQ841	86818.000000
SDQ842	85404.000000
SDQ843	81294.000000
SDQ844	74747.000000
SDQ851	79665.000000

DGSC Initial SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER HO RHO=0 / N = 12372

	ADW832	ADW833	ADW834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDW843	SDW844	SDW851
ADW832	1.00000 0.0000	0.75146 0.0001	0.00067 0.9407	0.02046 0.0228	0.00670 0.4560	0.00524 0.5597	-0.00045 0.9603	0.00227 0.8003	0.00005 0.9959	-0.00048 0.9575	-0.00052 0.9538	0.00086 0.9241	-0.00087 0.9234	-0.00091 0.9190	0.00084 0.9253	-0.00090 0.9207
ADW833	0.75146 0.0001	1.00000 0.0000	0.01152 0.2002	0.03884 0.0001	0.01572 0.0803	0.01487 0.0982	0.00454 0.6139	0.00334 0.7101	0.14097 0.0001	0.13858 0.0001	0.10769 0.0001	0.08051 0.0001	0.07398 0.0001	0.08362 0.0001	0.08671 0.0001	0.08426 0.0001
ADQ834	0.00067 0.9407	0.01152 0.2002	1.00000 0.0000	0.40725 0.0001	0.13874 0.0001	0.09646 0.0001	0.08161 0.0001	0.01969 0.0285	0.00682 0.4482	0.01603 0.0746	0.40576 0.0001	0.23346 0.0001	0.21115 0.0001	0.23804 0.0001	0.24635 0.0001	0.23983 0.0001
ADQ841	0.02046 0.0228	0.03884 0.0001	0.40725 0.0001	1.00000 0.0000	0.35656 0.0001	0.15462 0.0001	0.16709 0.0001	0.05268 0.0001	-0.00058 0.9483	0.01081 0.2293	0.01227 0.1723	0.02891 0.0013	0.01821 0.0428	0.02321 0.0098	0.02173 0.0156	0.02104 0.0193
ADQ842	0.00670 0.4560	0.01572 0.0803	0.13874 0.0001	0.35656 0.0001	1.00000 0.0000	0.28156 0.0001	0.24950 0.0001	0.23268 0.0001	0.00274 0.7608	0.01312 0.1445	0.01172 0.1924	0.01588 0.0773	0.01514 0.0922	0.01759 0.0504	0.01761 0.0502	0.01691 0.0601
ADQ843	0.00524 0.5597	0.01487 0.0982	0.09646 0.0001	0.15462 0.0001	0.28156 0.0001	1.00000 0.0000	0.59703 0.0001	0.67313 0.0001	0.00096 0.9147	0.00881 0.3274	0.01138 0.2057	0.02589 0.0040	0.02217 0.0137	0.02126 0.0181	0.02167 0.0159	0.02086 0.0203
ADQ844	-0.00045 0.9603	0.00454 0.6139	0.08161 0.0001	0.16709 0.0001	0.24950 0.0001	0.59703 0.0001	1.00000 0.0000	0.77487 0.0001	0.00275 0.7595	0.00797 0.3754	0.00716 0.4259	0.04862 0.0001	0.04292 0.0001	0.04974 0.0001	0.04981 0.0001	0.04834 0.0001
ADQ851	0.00227 0.8003	0.00334 0.7101	0.01969 0.0285	0.05268 0.0001	0.23268 0.0001	0.67313 0.0001	0.77487 0.0001	1.00000 0.0000	0.00052 0.9543	0.00114 0.8993	0.00388 0.6665	0.01738 0.0532	0.02352 0.0089	0.02899 0.0013	0.02826 0.0017	0.02742 0.0023
SDQ832	0.00005 0.9959	0.14097 0.0001	0.00682 0.4482	-0.00058 0.9483	0.00274 0.7608	0.00096 0.9147	0.00275 0.7595	0.00052 0.9543	1.00000 0.0000	0.78644 0.0001	0.50515 0.0001	0.56963 0.0001	0.52465 0.0001	0.59191 0.0001	0.61180 0.0001	0.59601 0.0001
SDQ833	-0.00048 0.9575	0.13858 0.0001	0.01603 0.0746	0.01081 0.2293	0.01312 0.1445	0.00881 0.3274	0.00797 0.3754	0.00114 0.8993	0.78644 0.0001	1.00000 0.0000	0.50117 0.0001	0.56464 0.0001	0.52011 0.0001	0.58696 0.0001	0.60696 0.0001	0.59109 0.0001
SDQ834	-0.00052 0.9538	0.10769 0.0001	0.40576 0.0001	0.01227 0.1723	0.01172 0.1924	0.01138 0.2057	0.00716 0.4259	0.00388 0.6665	0.50515 0.0001	0.50117 0.0001	1.00000 0.0000	0.68395 0.0001	0.63000 0.0001	0.71095 0.0001	0.73514 0.0001	0.71595 0.0001
SDQ841	-0.00086 0.9241	0.08051 0.0001	0.23346 0.0001	0.02891 0.0013	0.01588 0.0773	0.02589 0.0040	0.04862 0.0001	0.01738 0.0532	0.56963 0.0001	0.56464 0.0001	0.68395 0.0001	1.00000 0.0000	0.67185 0.0001	0.75824 0.0001	0.78413 0.0001	0.76359 0.0001
SDQ842	-0.00087 0.9234	0.07398 0.0001	0.21115 0.0001	0.01821 0.0428	0.01514 0.0922	0.02217 0.0137	0.04292 0.0001	0.02352 0.0089	0.52465 0.0001	0.52011 0.0001	0.63000 0.0001	0.67185 0.0001	1.00000 0.0000	0.91750 0.0001	0.94868 0.0001	0.92393 0.0001
SDQ843	-0.00091 0.9190	0.08362 0.0001	0.23804 0.0001	0.02321 0.0098	0.01759 0.0504	0.02126 0.0181	0.04974 0.0001	0.02899 0.0013	0.59191 0.0001	0.58696 0.0001	0.71095 0.0001	0.75824 0.0001	0.91750 0.0001	1.00000 0.0000	0.98375 0.0001	0.95808 0.0001
SDQ844	-0.00084 0.9253	0.08671 0.0001	0.24635 0.0001	0.02173 0.0156	0.01761 0.0502	0.02167 0.0159	0.04981 0.0001	0.02826 0.0017	0.61180 0.0001	0.60696 0.0001	0.73514 0.0001	0.78413 0.0001	0.94868 0.0001	0.98375 0.0001	1.00000 0.0000	0.97347 0.0001
SDQ851	-0.00090 0.9207	0.08426 0.0001	0.23983 0.0001	0.02104 0.0193	0.01691 0.0601	0.02086 0.0203	0.04834 0.0001	0.02742 0.0023	0.59601 0.0001	0.59109 0.0001	0.71595 0.0001	0.76359 0.0001	0.92393 0.0001	0.95808 0.0001	0.97347 0.0001	1.00000 0.0000

SAS

VARIABLE	SUM
ADQ832	668.000000
ADQ833	2431.000000
ADQ834	16852.000000
ADQ841	18258.000000
ADQ842	59889.000000
ADQ843	76518.000000
ADQ844	108037.000000
ADQ851	133685.000000
SDQ832	7558.000000
SDQ833	43851.000000
SDQ834	77371.000000
SDQ841	96045.000000
SDQ842	100128.000000
SDQ843	94683.000000
SDQ844	94004.000000
SDQ851	94153.000000

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 / N = 12372

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.75146 0.0001	0.00067 0.9407	0.02046 0.0228	0.00670 0.4560	0.00524 0.5597	-0.00045 0.9603	0.00227 0.8003	0.00005 0.9959	-0.00049 0.9568	-0.00052 0.9539	-0.00062 0.9451	0.00069 0.9390	-0.00083 0.9261	-0.00082 0.9272	-0.00077 0.9317
ADQ833	0.75146 0.0001	1.00000 0.0000	0.01152 0.2002	0.03884 0.0001	0.01572 0.0803	0.01487 0.0982	0.00454 0.6139	0.00334 0.7101	0.14097 0.0001	0.13856 0.0001	0.10690 0.0001	0.06916 0.0001	0.05190 0.0001	0.06813 0.0001	0.06793 0.0001	0.06692 0.0001
ADQ834	0.00067 0.9407	0.01152 0.2002	1.00000 0.0000	0.40725 0.0001	0.13874 0.0001	0.09646 0.0001	0.08161 0.0001	0.01969 0.0285	0.00682 0.4482	0.01601 0.0750	0.40152 0.0001	0.20084 0.0001	0.15005 0.0001	0.19629 0.0001	0.19615 0.0001	0.19260 0.0001
ADQ841	0.02046 0.0228	0.03884 0.0001	0.40725 0.0001	1.00000 0.0000	0.35656 0.0001	0.15462 0.0001	0.16709 0.0001	0.05268 0.0001	-0.00058 0.9483	0.01090 0.2253	0.01230 0.1712	0.02745 0.0023	0.01416 0.1153	0.02206 0.0141	0.02078 0.0208	0.01955 0.0296
ADQ842	0.00670 0.4560	0.01572 0.0803	0.13874 0.0001	0.35656 0.0001	1.00000 0.0000	0.28156 0.0001	0.24950 0.0001	0.23268 0.0001	0.00274 0.7608	0.01317 0.1431	0.07327 0.0001	0.04624 0.0001	0.03560 0.0001	0.04832 0.0001	0.04765 0.0001	0.04652 0.0001
ADQ843	0.00524 0.5597	0.01487 0.0982	0.09646 0.0001	0.15462 0.0001	0.28156 0.0001	1.00000 0.0000	0.59703 0.0001	0.67313 0.0001	0.00096 0.9147	0.00891 0.3219	0.01124 0.2112	0.02410 0.0074	0.01663 0.0644	0.01979 0.0277	0.01956 0.0296	0.01937 0.0312
ADQ844	-0.00045 0.9603	0.00454 0.6139	0.08161 0.0001	0.16709 0.0001	0.24950 0.0001	0.59703 0.0001	1.00000 0.0000	0.77487 0.0001	0.00275 0.7595	0.00808 0.3688	0.00702 0.4346	0.04183 0.0001	0.03030 0.0007	0.04101 0.0001	0.04063 0.0001	0.03958 0.0001
ADQ851	0.00227 0.8003	0.00334 0.7101	0.01969 0.0285	0.05268 0.0001	0.23268 0.0001	0.67313 0.0001	0.77487 0.0001	1.00000 0.0000	0.00052 0.9543	0.00114 0.8991	0.00380 0.6726	0.01472 0.1017	0.01649 0.0667	0.02352 0.0089	0.02302 0.0105	0.02189 0.0149
SDQ832	0.00005 0.9959	0.14097 0.0001	0.00682 0.4482	-0.00058 0.9483	0.00274 0.7608	0.00096 0.9147	0.00275 0.7595	0.00052 0.9543	1.00000 0.0000	0.78624 0.0001	0.49987 0.0001	0.47799 0.0001	0.36662 0.0001	0.47985 0.0001	0.47781 0.0001	0.47050 0.0001
SDQ833	-0.00049 0.9568	0.13856 0.0001	0.01601 0.0750	0.01090 0.2253	0.01317 0.1431	0.00891 0.3219	0.00808 0.3688	0.00114 0.8991	0.78624 0.0001	1.00000 0.0000	0.49639 0.0001	0.48373 0.0001	0.36656 0.0001	0.47994 0.0001	0.47887 0.0001	0.47060 0.0001
SDQ834	-0.00052 0.9539	0.10690 0.0001	0.40152 0.0001	0.01230 0.1712	0.07327 0.0001	0.01124 0.2112	0.00702 0.4346	0.00380 0.6726	0.49987 0.0001	0.49639 0.0001	1.00000 0.0000	0.58108 0.0001	0.44487 0.0001	0.58244 0.0001	0.58093 0.0001	0.57284 0.0001
SDQ841	-0.00062 0.9451	0.06916 0.0001	0.20084 0.0001	0.02745 0.0023	0.04624 0.0001	0.02410 0.0074	0.04183 0.0001	0.01472 0.1017	0.47799 0.0001	0.48373 0.0001	0.58108 0.0001	1.00000 0.0000	0.55472 0.0001	0.72822 0.0001	0.72481 0.0001	0.71363 0.0001
SDQ842	0.00069 0.9390	0.05190 0.0001	0.15005 0.0001	0.01416 0.1153	0.03560 0.0001	0.01663 0.0644	0.03030 0.0007	0.01649 0.0667	0.36662 0.0001	0.36656 0.0001	0.44487 0.0001	0.55472 0.0001	1.00000 0.0000	0.91097 0.0001	0.90778 0.0001	0.93095 0.0001
SDQ843	-0.00083 0.9261	0.06813 0.0001	0.19629 0.0001	0.02206 0.0141	0.04832 0.0001	0.01979 0.0277	0.04101 0.0001	0.02352 0.0089	0.47985 0.0001	0.47994 0.0001	0.58244 0.0001	0.72822 0.0001	0.91097 0.0001	1.00000 0.0000	0.95698 0.0001	0.96660 0.0001
SDQ844	-0.00082 0.9272	0.06793 0.0001	0.19615 0.0001	0.02078 0.0208	0.04765 0.0001	0.01956 0.0296	0.04063 0.0001	0.02302 0.0105	0.47781 0.0001	0.47887 0.0001	0.58093 0.0001	0.72481 0.0001	0.90778 0.0001	0.95698 0.0001	1.00000 0.0000	0.95911 0.0001
SDQ851	-0.00077 0.9317	0.06692 0.0001	0.19260 0.0001	0.01955 0.0296	0.04652 0.0001	0.01937 0.0312	0.03958 0.0001	0.02189 0.0149	0.47050 0.0001	0.47060 0.0001	0.57284 0.0001	0.71363 0.0001	0.93095 0.0001	0.96660 0.0001	0.95911 0.0001	1.00000 0.0000

DCSC Initial SSRs

SAS

VARIABLE	SUM
ADQ832	1765.000000
ADQ833	5606.000000
ADQ834	12370.000000
ADQ841	24387.000000
ADQ842	41839.000000
ADQ843	55612.000000
ADQ844	79392.000000
ADQ851	93149.000000
SDQ832	48914.000000
SDQ833	215650.000000
SDQ834	232380.000000
SDQ841	308242.000000
SDQ842	206024.000000
SDQ843	198479.000000
SDQ844	193863.000000
SDQ851	195378.000000

DCSC Initial SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 / N = 24845

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.02193 0.0005	0.12967 0.0001	0.00807 0.2034	0.01781 0.0050	0.00340 0.5925	0.02811 0.0001	0.01394 0.0280	-0.00048 0.9391	0.00304 0.6316	0.00161 0.7998	0.00200 0.7526	0.00179 0.7782	0.00155 0.8069	0.00228 0.7188	0.00224 0.7243
ADQ833	0.02193 0.0005	1.00000 0.0000	0.12065 0.0001	0.03643 0.0001	0.03520 0.0001	0.01384 0.0291	0.03645 0.0001	0.01935 0.0023	0.00466 0.4627	0.00555 0.3817	0.01190 0.0607	0.00627 0.3233	0.00941 0.1379	0.00968 0.1272	0.01165 0.0662	0.01157 0.0683
ADQ834	0.12967 0.0001	0.12065 0.0001	1.00000 0.0000	0.19518 0.0001	0.12450 0.0001	0.03682 0.0001	0.18820 0.0001	0.13965 0.0001	0.00826 0.1930	0.05676 0.0001	0.05497 0.0001	0.03606 0.0001	0.04501 0.0001	0.05500 0.0001	0.05663 0.0001	0.05627 0.0001
ADQ841	0.00807 0.2034	0.03643 0.0001	0.19518 0.0001	1.00000 0.0000	0.30471 0.0001	0.25108 0.0001	0.25191 0.0001	0.15835 0.0001	0.00738 0.2450	0.03534 0.0001	0.03441 0.0001	0.02655 0.0001	0.06693 0.0001	0.05207 0.0001	0.05993 0.0001	0.05893 0.0001
ADQ842	0.01781 0.0050	0.03520 0.0001	0.12450 0.0001	0.30471 0.0001	1.00000 0.0000	0.85046 0.0001	0.54476 0.0001	0.73614 0.0001	0.01393 0.0282	0.01027 0.1056	0.02001 0.0016	0.01416 0.0256	0.22986 0.0001	0.12389 0.0001	0.14621 0.0001	0.14422 0.0001
ADQ843	0.00340 0.5925	0.01384 0.0291	0.03682 0.0001	0.25108 0.0001	0.85046 0.0001	1.00000 0.0000	0.51462 0.0001	0.80753 0.0001	0.00465 0.4637	0.00918 0.1481	0.01459 0.0215	0.01095 0.0844	0.22217 0.0001	0.11728 0.0001	0.13622 0.0001	0.13525 0.0001
ADQ844	0.02811 0.0001	0.03645 0.0001	0.18820 0.0001	0.25191 0.0001	0.54476 0.0001	0.51462 0.0001	1.00000 0.0000	0.46531 0.0001	0.01348 0.0337	0.01881 0.0030	0.02961 0.0001	0.29743 0.0001	0.33819 0.0001	0.29339 0.0001	0.34270 0.0001	0.34080 0.0001
ADQ851	0.01394 0.0280	0.01935 0.0023	0.13965 0.0001	0.15835 0.0001	0.73614 0.0001	0.80753 0.0001	0.46531 0.0001	1.00000 0.0000	0.00610 0.3365	0.01304 0.0399	0.02221 0.0005	0.01410 0.0263	0.19478 0.0001	0.10713 0.0001	0.12214 0.0001	0.12121 0.0001
SDQ832	-0.00048 0.9391	0.00466 0.4627	0.00826 0.1930	0.00738 0.2450	0.01393 0.0282	0.00465 0.4637	0.01348 0.0337	0.00610 0.3365	1.00000 0.0000	0.00714 0.2607	0.01238 0.0510	0.00366 0.5644	0.00937 0.1397	0.00882 0.1643	0.01190 0.0607	0.01175 0.0641
SDQ833	0.00304 0.6316	0.00555 0.3817	0.05676 0.0001	0.03534 0.0001	0.01027 0.1056	0.00918 0.1481	0.01881 0.0030	0.01304 0.0399	0.00714 0.2607	1.00000 0.0000	0.29739 0.0001	0.17704 0.0001	0.25968 0.0001	0.32774 0.0001	0.32963 0.0001	0.32729 0.0001
SDQ834	0.00161 0.7998	0.01190 0.0607	0.05497 0.0001	0.03441 0.0001	0.02001 0.0016	0.01459 0.0215	0.02961 0.0001	0.02221 0.0005	0.01238 0.0510	0.29739 0.0001	1.00000 0.0000	0.24454 0.0001	0.38719 0.0001	0.43509 0.0001	0.46529 0.0001	0.46227 0.0001
SDQ841	0.00200 0.7526	0.00627 0.3233	0.03606 0.0001	0.02655 0.0001	0.01416 0.0256	0.01095 0.0844	0.29743 0.0001	0.01410 0.0263	0.00366 0.5644	0.17704 0.0001	0.24454 0.0001	1.00000 0.0000	0.72614 0.0001	0.79686 0.0001	0.89221 0.0001	0.88375 0.0001
SDQ842	0.00179 0.7782	0.00941 0.1379	0.04501 0.0001	0.06693 0.0001	0.22986 0.0001	0.22217 0.0001	0.33819 0.0001	0.19478 0.0001	0.00937 0.1397	0.25968 0.0001	0.38719 0.0001	0.72614 0.0001	1.00000 0.0000	0.74825 0.0001	0.83243 0.0001	0.82661 0.0001
SDQ843	0.00155 0.8069	0.00968 0.1272	0.05500 0.0001	0.05207 0.0001	0.12389 0.0001	0.11728 0.0001	0.29339 0.0001	0.10713 0.0001	0.00882 0.1643	0.32774 0.0001	0.43509 0.0001	0.79686 0.0001	0.74825 0.0001	1.00000 0.0000	0.91267 0.0001	0.90648 0.0001
SDQ844	0.00228 0.7188	0.01165 0.0662	0.05663 0.0001	0.05993 0.0001	0.14621 0.0001	0.13622 0.0001	0.34270 0.0001	0.12214 0.0001	0.01190 0.0607	0.32963 0.0001	0.46529 0.0001	0.89221 0.0001	0.83243 0.0001	0.91267 0.0001	1.00000 0.0000	0.98885 0.0001
SDQ851	0.00224 0.7243	0.01157 0.0683	0.05627 0.0001	0.05893 0.0001	0.14422 0.0001	0.13525 0.0001	0.34080 0.0001	0.12121 0.0001	0.01175 0.0641	0.32729 0.0001	0.46227 0.0001	0.88375 0.0001	0.82661 0.0001	0.90648 0.0001	0.98885 0.0001	1.00000 0.0000

SAS

VARIABLE	SUM
ADQ832	1765.000000
ADQ833	5606.000000
ADQ834	12370.000000
ADQ841	24387.000000
ADQ842	41839.000000
ADQ843	55612.000000
ADQ844	79392.000000
ADQ851	93149.000000
SDQ832	52735.000000
SDQ833	248909.000000
SDQ834	242123.000000
SDQ841	338068.000000
SDQ842	232347.000000
SDQ843	260633.000000
SDQ844	223987.000000
SDQ851	225022.000000

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 / N = 24845

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.02193 0.0005	0.12967 0.0001	0.00807 0.2034	0.01781 0.0050	0.00340 0.5925	0.02811 0.0001	0.01394 0.0280	-0.00047 0.9405	0.00395 0.5339	0.00175 0.7827	-0.00002 0.9975	0.00097 0.8781	0.00126 0.8420	0.00133 0.8336	0.00130 0.8376
ADQ833	0.02193 0.0005	1.00000 0.0000	0.12065 0.0001	0.03643 0.0001	0.03520 0.0001	0.01384 0.0291	0.03645 0.0001	0.01935 0.0023	0.00538 0.3962	0.00685 0.2800	0.01227 0.0531	0.00537 0.3970	0.00992 0.1179	0.01209 0.0566	0.01225 0.0535	0.01211 0.0564
ADQ834	0.12967 0.0001	0.12065 0.0001	1.00000 0.0000	0.19518 0.0001	0.12450 0.0001	0.03682 0.0001	0.18820 0.0001	0.13965 0.0001	0.00895 0.1582	0.07149 0.0001	0.05588 0.0001	0.02659 0.0001	0.04506 0.0001	0.05449 0.0001	0.05500 0.0001	0.05441 0.0001
ADQ841	0.00807 0.2034	0.03643 0.0001	0.19518 0.0001	1.00000 0.0000	0.30471 0.0001	0.25108 0.0001	0.25191 0.0001	0.15835 0.0001	0.00838 0.1863	0.04366 0.0001	0.03497 0.0001	0.01726 0.0065	0.03621 0.0001	0.03690 0.0001	0.03707 0.0001	0.03664 0.0001
ADQ842	0.01781 0.0050	0.03520 0.0001	0.12450 0.0001	0.30471 0.0001	1.00000 0.0000	0.85046 0.0001	0.54476 0.0001	0.73614 0.0001	0.01555 0.0142	0.01332 0.0358	0.01981 0.0018	0.00929 0.1429	0.03126 0.0001	0.02195 0.0005	0.02157 0.0007	0.02132 0.0008
ADQ843	0.00340 0.5925	0.01384 0.0291	0.03682 0.0001	0.25108 0.0001	0.85046 0.0001	1.00000 0.0000	0.51462 0.0001	0.80753 0.0001	0.00525 0.4082	0.01179 0.0631	0.01487 0.0190	0.00736 0.2463	0.02227 0.0004	0.01600 0.0117	0.01579 0.0128	0.01558 0.0141
ADQ844	0.02811 0.0001	0.03645 0.0001	0.18820 0.0001	0.25191 0.0001	0.54476 0.0001	0.51462 0.0001	1.00000 0.0000	0.46531 0.0001	0.01543 0.0150	0.02296 0.0003	0.02930 0.0001	0.30040 0.0001	0.25736 0.0001	0.30005 0.0001	0.30059 0.0001	0.29758 0.0001
ADQ851	0.01394 0.0280	0.01935 0.0023	0.13965 0.0001	0.15835 0.0001	0.73614 0.0001	0.80753 0.0001	0.46531 0.0001	1.00000 0.0000	0.00697 0.2717	0.01699 0.0074	0.02271 0.0003	0.00965 0.1282	0.02261 0.0004	0.01939 0.0022	0.01828 0.0040	0.01805 0.0044
SDQ832	-0.00047 0.9405	0.00538 0.3962	0.00895 0.1582	0.00838 0.1863	0.01555 0.0142	0.00525 0.4082	0.01543 0.0150	0.00697 0.2717	1.00000 0.0000	0.00156 0.8052	0.00110 0.8627	-0.00137 0.8287	0.00204 0.7479	0.00283 0.6557	0.00307 0.6279	0.00297 0.6397
SDQ833	0.00395 0.5339	0.00685 0.2800	0.07149 0.0001	0.04366 0.0001	0.01332 0.0358	0.01179 0.0631	0.02296 0.0003	0.01699 0.0074	0.00156 0.8052	1.00000 0.0000	0.34864 0.0001	0.18912 0.0001	0.30665 0.0001	0.37018 0.0001	0.37281 0.0001	0.36901 0.0001
SDQ834	0.00175 0.7827	0.01227 0.0531	0.05588 0.0001	0.03497 0.0001	0.01981 0.0018	0.01487 0.0190	0.02930 0.0001	0.02271 0.0003	0.00110 0.8627	0.34864 0.0001	1.00000 0.0000	0.22915 0.0001	0.37239 0.0001	0.44960 0.0001	0.45284 0.0001	0.44822 0.0001
SDQ841	-0.00002 0.9975	0.00537 0.3970	0.02659 0.0001	0.01726 0.0065	0.00929 0.1429	0.00736 0.2463	0.30040 0.0001	0.00965 0.1282	-0.00137 0.8287	0.18912 0.0001	0.22915 0.0001	1.00000 0.0000	0.75510 0.0001	0.91024 0.0001	0.91593 0.0001	0.90686 0.0001
SDQ842	0.00097 0.8781	0.00992 0.1179	0.04506 0.0001	0.03621 0.0001	0.03126 0.0001	0.02227 0.0004	0.25736 0.0001	0.02261 0.0004	0.00204 0.7479	0.30665 0.0001	0.37239 0.0001	0.75510 0.0001	1.00000 0.0000	0.82206 0.0001	0.82727 0.0001	0.81905 0.0001
SDQ843	0.00126 0.8420	0.01209 0.0566	0.05449 0.0001	0.03690 0.0001	0.02195 0.0005	0.01600 0.0117	0.30005 0.0001	0.01939 0.0022	0.00283 0.6557	0.37018 0.0001	0.44960 0.0001	0.91024 0.0001	0.82206 0.0001	1.00000 0.0000	0.99524 0.0001	0.98935 0.0001
SDQ844	0.00133 0.8336	0.01225 0.0535	0.05500 0.0001	0.03707 0.0001	0.02157 0.0007	0.01579 0.0128	0.30059 0.0001	0.01828 0.0040	0.00307 0.6279	0.37281 0.0001	0.45284 0.0001	0.91593 0.0001	0.82727 0.0001	0.99524 0.0001	1.00000 0.0000	0.98935 0.0001
SDQ851	0.00130 0.8376	0.01211 0.0564	0.05441 0.0001	0.03664 0.0001	0.02132 0.0008	0.01558 0.0141	0.29758 0.0001	0.01805 0.0044	0.00297 0.6397	0.36901 0.0001	0.44822 0.0001	0.90686 0.0001	0.81905 0.0001	0.98535 0.0001	0.98935 0.0001	1.00000 0.0000

DESC Initial SSRs

VARIABLE	SUM
ADQ832	697.000000
ADQ833	2072.000000
ADQ834	11714.000000
ADQ841	17148.000000
ADQ842	67046.000000
ADQ843	77634.000000
ADQ844	113387.000000
ADQ851	168169.000000
SDQ832	3123.000000
SDQ833	42746.000000
SDQ834	94666.000000
SDQ841	119621.000000
SDQ842	141762.000000
SDQ843	140012.000000
SDQ844	143064.000000
SDQ851	138950.000000

DESC Initial SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0 RHO=0 / N = 38460

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.38430 0.0001	0.01135 0.0260	0.01830 0.0003	0.00112 0.8259	0.01363 0.0075	0.00499 0.3279	0.00122 0.8116	0.00027 0.9585	0.00167 0.7434	-0.00036 0.9437	-0.00073 0.8868	-0.00114 0.8236	-0.00069 0.8922	-0.00052 0.9188	-0.00057 0.9104
ADQ833	0.38430 0.0001	1.00000 0.0000	0.03099 0.0001	0.12315 0.0001	0.05305 0.0001	0.03809 0.0001	0.02232 0.0001	0.01116 0.0287	0.04470 0.0001	0.20329 0.0001	0.02057 0.0001	0.01899 0.0002	0.02298 0.0001	0.01537 0.0026	0.01177 0.0210	0.01212 0.0175
ADQ834	0.01135 0.0260	0.03099 0.0001	1.00000 0.0000	0.05631 0.0001	0.02257 0.0001	0.09671 0.0001	0.03880 0.0001	0.00207 0.6852	0.00451 0.3770	0.08789 0.0001	0.01009 0.0479	0.01002 0.0494	0.01096 0.0316	0.00737 0.1485	0.00561 0.2717	0.00580 0.2557
ADQ841	0.01830 0.0003	0.12315 0.0001	0.05631 0.0001	1.00000 0.0000	0.08948 0.0001	0.06819 0.0001	0.04643 0.0001	0.01326 0.0093	0.02737 0.0001	0.03616 0.0001	0.03390 0.0001	0.03734 0.0001	0.03166 0.0001	0.02349 0.0001	0.01666 0.0011	0.01724 0.0007
ADQ842	0.00112 0.8259	0.05305 0.0001	0.02257 0.0001	0.08948 0.0001	1.00000 0.0000	0.38806 0.0001	0.11836 0.0001	0.04693 0.0001	0.00661 0.1950	0.05552 0.0001	0.00968 0.0577	0.02356 0.0001	0.01363 0.0075	0.01103 0.0305	0.00754 0.1395	0.00776 0.1279
ADQ843	0.01363 0.0075	0.03809 0.0001	0.09671 0.0001	0.06819 0.0001	0.38806 0.0001	1.00000 0.0000	0.30449 0.0001	0.09624 0.0001	0.03982 0.0001	0.06708 0.1650	0.00759 0.1365	0.00543 0.2873	0.00827 0.1049	0.00596 0.2429	0.00340 0.5047	0.00353 0.4890
ADQ844	0.00499 0.3279	0.02232 0.0001	0.03880 0.0001	0.04643 0.0001	0.11836 0.0001	0.30449 0.0001	1.00000 0.0000	0.05107 0.0001	0.00600 0.2392	0.03117 0.0001	0.01238 0.0152	0.00879 0.0847	0.00942 0.0648	0.00698 0.1713	0.00473 0.3538	0.00491 0.3354
ADQ851	0.00122 0.8116	0.01116 0.0287	0.00207 0.6852	0.01326 0.0093	0.04693 0.0001	0.09624 0.0001	0.05107 0.0001	1.00000 0.0000	0.00821 0.1075	0.01044 0.0407	0.00211 0.6795	0.02085 0.0001	0.00735 0.1493	0.00589 0.3182	0.00353 0.4887	0.00366 0.4731
SDQ832	0.00027 0.9585	0.04470 0.0001	0.00451 0.3770	0.02737 0.0001	0.00661 0.1950	0.03982 0.0001	0.00600 0.2392	0.00821 0.1075	1.00000 0.0000	0.13732 0.0001	0.06642 0.0001	0.06242 0.0001	0.07407 0.0001	0.05029 0.0001	0.03833 0.0001	0.03956 0.0001
SDQ833	0.00167 0.7434	0.20329 0.0001	0.08789 0.0001	0.03616 0.0001	0.05552 0.0001	0.06708 0.1650	0.03117 0.0001	0.01044 0.0407	0.13732 0.0001	1.00000 0.0000	0.15479 0.0001	0.14549 0.0001	0.17265 0.0001	0.11721 0.0001	0.08935 0.0001	0.09222 0.0001
SDQ834	-0.00036 0.9437	0.02057 0.0001	0.01009 0.0479	0.03390 0.0001	0.00968 0.0577	0.00759 0.1365	0.01238 0.0152	0.00211 0.6795	0.06642 0.0001	0.15479 0.0001	1.00000 0.0000	0.57891 0.0001	0.68824 0.0001	0.46716 0.0001	0.35620 0.0001	0.36753 0.0001
SDQ841	-0.00073 0.8868	0.01899 0.0002	0.01002 0.0494	0.03734 0.0001	0.02356 0.0001	0.00543 0.2873	0.00879 0.0847	0.02085 0.0001	0.06242 0.0001	0.14549 0.0001	0.57891 0.0001	1.00000 0.0000	0.82527 0.0001	0.56018 0.0001	0.42713 0.0001	0.44071 0.0001
SDQ842	-0.00114 0.8236	0.02298 0.0001	0.01096 0.0316	0.03166 0.0001	0.01363 0.0075	0.00827 0.1049	0.00942 0.0648	0.00735 0.1493	0.07407 0.0001	0.17265 0.0001	0.68824 0.0001	0.82527 0.0001	1.00000 0.0000	0.59906 0.0001	0.45676 0.0001	0.47131 0.0001
SDQ843	-0.00069 0.8922	0.01537 0.0026	0.00737 0.1485	0.02349 0.0001	0.01103 0.0305	0.00596 0.2429	0.00698 0.1713	0.00589 0.3182	0.05029 0.0001	0.11721 0.0001	0.46716 0.0001	0.56018 0.0001	0.59906 0.0001	1.00000 0.0000	0.56994 0.0001	0.58805 0.0001
SDQ844	-0.00052 0.9188	0.01177 0.0210	0.00561 0.2717	0.01666 0.0011	0.00754 0.1395	0.00340 0.5047	0.00473 0.3538	0.00353 0.4887	0.03833 0.0001	0.08935 0.0001	0.35620 0.0001	0.42713 0.0001	0.45676 0.0001	0.56994 0.0001	1.00000 0.0000	0.99015 0.0001
SDQ851	-0.00057 0.9104	0.01212 0.0175	0.00580 0.2557	0.01724 0.0007	0.00776 0.1279	0.00353 0.4890	0.00491 0.3354	0.00366 0.4731	0.03956 0.0001	0.09222 0.0001	0.36753 0.0001	0.44071 0.0001	0.47131 0.0001	0.58805 0.0001	0.99015 0.0001	1.00000 0.0000

DESC Follow-on SSRs

SAS

VARIABLE	SUM
ADQ832	697.000000
ADQ833	2072.000000
ADQ834	11714.000000
ADQ841	17148.000000
ADQ842	67046.000000
ADQ843	77634.000000
ADQ844	113387.000000
ADQ851	168169.000000
SDQ832	3594.000000
SDQ833	47587.000000
SDQ834	104890.000000
SDQ841	144638.000000
SDQ842	174631.000000
SDQ843	186747.000000
SDQ844	208374.000000
SDQ851	200135.000000

DESC Follow-on SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 / N = 38460

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.38430 0.0001	0.01135 0.0260	0.01830 0.0003	0.00112 0.8259	0.01363 0.0075	0.00499 0.3279	0.00122 0.8116	0.00018 0.9716	0.00272 0.5943	-0.00037 0.9429	-0.00048 0.9253	-0.00108 0.8322	-0.00032 0.9505	-0.00046 0.9278	-0.00054 0.9151
ADQ833	0.38430 0.0001	1.00000 0.0000	0.03099 0.0001	0.12315 0.0001	0.05305 0.0001	0.03809 0.0001	0.02232 0.0001	0.01116 0.0287	0.04095 0.0001	0.19435 0.0001	0.02058 0.0001	0.01382 0.0067	0.01708 0.0008	0.01341 0.0085	0.00875 0.0860	0.00892 0.0801
ADQ834	0.01135 0.0260	0.03099 0.0001	1.00000 0.0000	0.05631 0.0001	0.02257 0.0001	0.09671 0.0001	0.03880 0.0001	0.00207 0.6852	0.00410 0.4215	0.08398 0.0001	0.01035 0.0423	0.00759 0.1364	0.00850 0.0954	0.00645 0.2057	0.00424 0.4055	0.00464 0.3626
ADQ841	0.01830 0.0003	0.12315 0.0001	0.05631 0.0001	1.00000 0.0000	0.08948 0.0001	0.06819 0.0001	0.04643 0.0001	0.01326 0.0093	0.02525 0.0001	0.03436 0.0001	0.03433 0.0001	0.02893 0.0001	0.05725 0.0001	0.02299 0.0001	0.01374 0.0070	0.01421 0.0053
ADQ842	0.00112 0.8259	0.05305 0.0001	0.02257 0.0001	0.08948 0.0001	1.00000 0.0000	0.38806 0.0001	0.11836 0.0001	0.04693 0.0001	0.00597 0.2415	0.05324 0.0001	0.01009 0.0479	0.01863 0.0003	0.02610 0.0001	0.01552 0.0023	0.01166 0.0222	0.01000 0.0499
ADQ843	0.01363 0.0075	0.03809 0.0001	0.09671 0.0001	0.06819 0.0001	0.38806 0.0001	1.00000 0.0000	0.30449 0.0001	0.09624 0.0001	0.03669 0.0001	0.00768 0.1322	0.00921 0.0710	0.00531 0.2979	0.02148 0.0001	0.01651 0.0012	0.01772 0.0005	0.01220 0.0168
ADQ844	0.00499 0.3279	0.02232 0.0001	0.03880 0.0001	0.04643 0.0001	0.11836 0.0001	0.30449 0.0001	1.00000 0.0000	0.05107 0.0001	0.00571 0.2631	0.02989 0.0001	0.01242 0.0148	0.00699 0.1706	0.01065 0.0367	0.00933 0.0672	0.01002 0.0494	0.00779 0.1265
ADQ851	0.00122 0.8116	0.01116 0.0287	0.00207 0.6852	0.01326 0.0093	0.04693 0.0001	0.09624 0.0001	0.05107 0.0001	1.00000 0.0000	0.00750 0.1411	0.00996 0.0508	0.00214 0.6750	0.01519 0.0029	0.00686 0.1782	0.00529 0.2993	0.00394 0.4399	0.00382 0.4534
SDQ832	0.00018 0.9716	0.04095 0.0001	0.00410 0.4215	0.02525 0.0001	0.00597 0.2415	0.03669 0.0001	0.00571 0.2631	0.00750 0.1411	1.00000 0.0000	0.13080 0.0001	0.06767 0.0001	0.04552 0.0001	0.05510 0.0001	0.04266 0.0001	0.02854 0.0001	0.02924 0.0001
SDQ833	0.00272 0.5943	0.19435 0.0001	0.08398 0.0001	0.03436 0.0001	0.05324 0.0001	0.00768 0.1322	0.02989 0.0001	0.00996 0.0508	0.13080 0.0001	1.00000 0.0000	0.16044 0.0001	0.11270 0.0001	0.13653 0.0001	0.10539 0.0001	0.06999 0.0001	0.07271 0.0001
SDQ834	-0.00037 0.9429	0.02058 0.0001	0.01035 0.0423	0.03433 0.0001	0.01009 0.0479	0.00921 0.0710	0.01242 0.0148	0.00214 0.6750	0.06767 0.0001	0.16044 0.0001	1.00000 0.0000	0.42571 0.0001	0.52014 0.0001	0.39741 0.0001	0.26770 0.0001	0.27413 0.0001
SDQ841	-0.00048 0.9253	0.01382 0.0067	0.00759 0.1364	0.02893 0.0001	0.01863 0.0003	0.00531 0.2979	0.00699 0.1706	0.01519 0.0029	0.04552 0.0001	0.11270 0.0001	0.42571 0.0001	1.00000 0.0000	0.87028 0.0001	0.66986 0.0001	0.45170 0.0001	0.46220 0.0001
SDQ842	-0.00108 0.8322	0.01708 0.0008	0.00850 0.0954	0.05725 0.0001	0.02610 0.0001	0.02148 0.0001	0.01065 0.0367	0.00686 0.1782	0.05510 0.0001	0.13653 0.0001	0.52014 0.0001	0.87028 0.0001	1.00000 0.0000	0.70731 0.0001	0.47694 0.0001	0.48793 0.0001
SDQ843	-0.00032 0.9505	0.01341 0.0085	0.00645 0.2057	0.02299 0.0001	0.01552 0.0023	0.01651 0.0012	0.00933 0.0672	0.00529 0.2993	0.04266 0.0001	0.10539 0.0001	0.39741 0.0001	0.66986 0.0001	0.70731 0.0001	1.00000 0.0000	0.54777 0.0001	0.55999 0.0001
SDQ844	-0.00046 0.9278	0.00875 0.0860	0.00424 0.4055	0.01374 0.0070	0.01166 0.0222	0.01772 0.0005	0.01002 0.0494	0.00394 0.4399	0.02854 0.0001	0.06999 0.0001	0.26770 0.0001	0.45170 0.0001	0.47694 0.0001	0.54777 0.0001	1.00000 0.0000	0.99143 0.0001
SDQ851	-0.00054 0.9151	0.00892 0.0801	0.00464 0.3626	0.01421 0.0053	0.01000 0.0499	0.01220 0.0168	0.00779 0.1265	0.00382 0.4534	0.02924 0.0001	0.07271 0.0001	0.27413 0.0001	0.46220 0.0001	0.48793 0.0001	0.55999 0.0001	0.99143 0.0001	1.00000 0.0000

DISC Initial SSRs

SAS

VARIABLE	SUM
ADQ832	16686.00000
ADQ833	64820.00000
ADQ834	82900.00000
ADQ841	234256.00000
ADQ842	406072.00000
ADQ843	419627.00000
ADQ844	1112848.00000
ADQ851	614457.00000
SDQ832	90783.00000
SDQ833	1371962.00000
SDQ834	923966.00000
SDQ841	1248801.00000
SDQ842	1093464.00000
SDQ843	1118097.00000
SDQ844	1053873.00000
SDQ851	1093881.00000

DISC Initial SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 / N = 37217

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.81332 0.0001	0.24151 0.0001	0.05456 0.0001	0.26310 0.0001	0.12320 0.0001	0.01469 0.0046	0.11556 0.0001	0.00002 0.9966	-0.00056 0.9135	-0.00055 0.9148	-0.00111 0.8309	-0.00098 0.8500	-0.00099 0.8479	-0.00095 0.8539	-0.00098 0.8497
ADQ833	0.81332 0.0001	1.00000 0.0000	0.18088 0.0001	0.03405 0.0001	0.22150 0.0001	0.10001 0.0001	0.01439 0.0055	0.13099 0.0001	-0.00002 0.9966	0.00434 0.4020	0.00149 0.7744	0.00152 0.7687	0.00159 0.7597	0.00154 0.7664	0.00166 0.7485	0.00160 0.7577
ADQ834	0.24151 0.0001	0.18088 0.0001	1.00000 0.0000	0.18338 0.0001	0.34680 0.0001	0.39003 0.0001	0.07713 0.0001	0.32162 0.0001	0.03772 0.0001	0.00066 0.8987	0.00255 0.6232	0.00508 0.3272	0.01076 0.0378	0.00534 0.3034	0.00559 0.2808	0.00542 0.2961
ADQ841	0.05456 0.0001	0.03405 0.0001	0.18338 0.0001	1.00000 0.0000	0.11621 0.0001	0.12821 0.0001	0.25741 0.0001	0.10146 0.0001	0.00357 0.4908	0.00119 0.8187	0.00081 0.8752	0.00578 0.2649	0.00503 0.3320	0.00376 0.4688	0.00388 0.4547	0.00377 0.4667
ADQ842	0.26310 0.0001	0.22150 0.0001	0.34680 0.0001	0.11621 0.0001	1.00000 0.0000	0.49418 0.0001	0.15242 0.0001	0.33244 0.0001	0.01239 0.0168	0.00100 0.8474	0.04291 0.0001	0.04405 0.0001	0.03498 0.0001	0.02727 0.0001	0.02794 0.0001	0.02770 0.0001
ADQ843	0.12320 0.0001	0.10001 0.0001	0.39003 0.0001	0.12821 0.0001	0.49418 0.0001	1.00000 0.0000	0.12895 0.0001	0.49729 0.0001	0.02476 0.0001	0.01848 0.0004	0.03434 0.0001	0.04395 0.0001	0.10874 0.0001	0.05773 0.0001	0.05868 0.0001	0.06028 0.0001
ADQ844	0.01469 0.0046	0.01439 0.0055	0.07713 0.0001	0.25741 0.0001	0.15242 0.0001	0.12895 0.0001	1.00000 0.0000	0.08615 0.0001	0.00629 0.2248	0.00267 0.6071	0.02797 0.0001	0.01439 0.0055	0.01355 0.0090	0.01245 0.0163	0.01263 0.0148	0.01277 0.0138
ADQ851	0.11556 0.0001	0.13099 0.0001	0.32162 0.0001	0.10146 0.0001	0.33244 0.0001	0.49729 0.0001	0.08615 0.0001	1.00000 0.0000	0.00732 0.1580	0.02170 0.0001	0.01829 0.0004	0.03120 0.0001	0.04853 0.0001	0.03994 0.0001	0.03796 0.0001	0.03860 0.0001
SDQ832	0.00002 0.9966	-0.00002 0.9966	0.03772 0.0001	0.00357 0.4908	0.01239 0.0168	0.02476 0.0001	0.00629 0.2248	0.00732 0.1580	1.00000 0.0000	0.00676 0.1922	0.01357 0.0088	0.01599 0.0020	0.01713 0.0010	0.01685 0.0012	0.01761 0.0007	0.01718 0.0009
SDQ833	-0.00056 0.9135	0.00434 0.4020	0.00066 0.8987	0.00119 0.8187	0.00100 0.8474	0.01848 0.0004	0.00267 0.6071	0.02170 0.0001	0.00676 0.1922	1.00000 0.0000	0.57772 0.0001	0.75444 0.0001	0.76822 0.0001	0.76157 0.0001	0.78013 0.0001	0.77070 0.0001
SDQ834	-0.00055 0.9148	0.00149 0.7744	0.00255 0.6232	0.00081 0.8752	0.04291 0.0001	0.03434 0.0001	0.02797 0.0001	0.01829 0.0004	0.01357 0.0088	0.57772 0.0001	1.00000 0.0000	0.50836 0.0001	0.51812 0.0001	0.51355 0.0001	0.52627 0.0001	0.51978 0.0001
SDQ841	-0.00111 0.8309	0.00152 0.7687	0.00508 0.3272	0.00578 0.2649	0.04405 0.0001	0.04395 0.0001	0.01439 0.0055	0.03120 0.0001	0.01599 0.0020	0.75444 0.0001	0.50836 0.0001	1.00000 0.0000	0.85201 0.0001	0.84448 0.0001	0.86546 0.0001	0.85475 0.0001
SDQ842	-0.00098 0.8500	0.00159 0.7597	0.01076 0.0378	0.00503 0.3320	0.03498 0.0001	0.10874 0.0001	0.01355 0.0090	0.04853 0.0001	0.01713 0.0010	0.76822 0.0001	0.51812 0.0001	0.85201 0.0001	1.00000 0.0000	0.87293 0.0001	0.89449 0.0001	0.88350 0.0001
SDQ843	-0.00099 0.8479	0.00154 0.7664	0.00534 0.3034	0.00376 0.4688	0.02727 0.0001	0.05773 0.0001	0.01245 0.0163	0.03994 0.0001	0.01685 0.0012	0.76157 0.0001	0.51355 0.0001	0.84448 0.0001	0.87293 0.0001	1.00000 0.0000	0.98713 0.0001	0.97504 0.0001
SDQ844	-0.00095 0.8539	0.00166 0.7485	0.00559 0.2808	0.00388 0.4547	0.02794 0.0001	0.05868 0.0001	0.01263 0.0148	0.03796 0.0001	0.01761 0.0007	0.78013 0.0001	0.52627 0.0001	0.86546 0.0001	0.89449 0.0001	0.98713 0.0001	1.00000 0.0000	0.98712 0.0001
SDQ851	-0.00098 0.8497	0.00160 0.7577	0.00542 0.2961	0.00377 0.4667	0.02770 0.0001	0.06028 0.0001	0.01277 0.0138	0.03860 0.0001	0.01718 0.0009	0.77070 0.0001	0.51978 0.0001	0.85475 0.0001	0.88350 0.0001	0.97504 0.0001	0.98712 0.0001	1.00000 0.0000

DISC Follow-on SSRs

SAS

VARIABLE	SUM
ADQ832	16686.00000
ADQ833	64820.00000
ADQ834	82900.00000
ADQ841	234256.00000
ADQ842	406072.00000
ADQ843	419627.00000
ADQ844	1112848.00000
ADQ851	614457.00000
SDQ832	101224.00000
SDQ833	1411065.00000
SDQ834	976866.00000
SDQ841	1397222.00000
SDQ842	1203932.00000
SDQ843	1320527.00000
SDQ844	1202567.00000
SDQ851	1236594.00000

DISC Follow-on SSRs

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0: RHO=0 / N = 37217

	ADQ832	ADQ833	ADQ834	ADQ841	ADQ842	ADQ843	ADQ844	ADQ851	SDQ832	SDQ833	SDQ834	SDQ841	SDQ842	SDQ843	SDQ844	SDQ851
ADQ832	1.00000 0.0000	0.81332 0.0001	0.24151 0.0001	0.05456 0.0001	0.26310 0.0001	0.12320 0.0001	0.01469 0.0046	0.11556 0.0001	0.00000 0.9994	0.00025 0.9608	0.00014 0.9786	-0.00023 0.9648	-0.00008 0.9870	0.00050 0.9235	0.00020 0.9694	0.00013 0.9806
ADQ833	0.81332 0.0001	1.00000 0.0000	0.18088 0.0001	0.03405 0.0001	0.22150 0.0001	0.10001 0.0001	0.01439 0.0055	0.13099 0.0001	-0.00008 0.9883	0.00729 0.1597	0.00403 0.4369	0.00485 0.3497	0.00504 0.3313	0.00663 0.2012	0.00552 0.2865	0.00543 0.2951
ADQ834	0.24151 0.0001	0.18088 0.0001	1.00000 0.0000	0.18338 0.0001	0.34680 0.0001	0.39003 0.0001	0.07713 0.0001	0.32162 0.0001	0.03696 0.0001	0.00273 0.5979	0.00480 0.3550	0.01556 0.0027	0.01791 0.0006	0.01847 0.0004	0.01546 0.0029	0.01512 0.0035
ADQ841	0.05456 0.0001	0.03405 0.0001	0.18338 0.0001	1.00000 0.0000	0.11621 0.0001	0.12821 0.0001	0.25741 0.0001	0.10146 0.0001	0.00398 0.4429	0.00145 0.7796	0.00125 0.8091	0.00715 0.1676	0.00609 0.2402	0.00632 0.2226	0.00601 0.2463	0.00592 0.2533
ADQ842	0.26310 0.0001	0.22150 0.0001	0.34680 0.0001	0.11621 0.0001	1.00000 0.0000	0.49418 0.0001	0.15242 0.0001	0.33244 0.0001	0.01179 0.0230	0.00187 0.7181	0.04351 0.0001	0.04508 0.0001	0.03704 0.0001	0.02948 0.0001	0.03029 0.0001	0.03017 0.0001
ADQ843	0.12320 0.0001	0.10001 0.0001	0.39003 0.0001	0.12821 0.0001	0.49418 0.0001	1.00000 0.0000	0.12895 0.0001	0.49729 0.0001	0.02363 0.0001	0.01916 0.0002	0.03531 0.0001	0.04538 0.0001	0.10898 0.0001	0.06078 0.0001	0.06051 0.0001	0.06242 0.0001
ADQ844	0.01469 0.0046	0.01439 0.0055	0.07713 0.0001	0.25741 0.0001	0.15242 0.0001	0.12895 0.0001	1.00000 0.0000	0.08615 0.0001	0.00599 0.2481	0.00281 0.5881	0.02790 0.0001	0.01457 0.0049	0.01392 0.0073	0.01301 0.0121	0.01311 0.0114	0.01324 0.0107
ADQ851	0.11556 0.0001	0.13099 0.0001	0.32162 0.0001	0.10146 0.0001	0.33244 0.0001	0.49729 0.0001	0.08615 0.0001	1.00000 0.0000	0.00684 0.1872	0.02338 0.0001	0.02002 0.0001	0.03272 0.0001	0.05190 0.0001	0.05155 0.0001	0.04411 0.0001	0.04470 0.0001
SDQ832	0.00000 0.9994	-0.00008 0.9883	0.03696 0.0001	0.00398 0.4429	0.01179 0.0230	0.02363 0.0001	0.00599 0.2481	0.00684 0.1872	1.00000 0.0000	0.00725 0.1621	0.01541 0.0030	0.01601 0.0020	0.01762 0.0007	0.01691 0.0011	0.01804 0.0005	0.01767 0.0007
SDQ833	0.00025 0.9608	0.00729 0.1597	0.00273 0.5979	0.00145 0.7796	0.00187 0.7181	0.01916 0.0002	0.00281 0.5881	0.02338 0.0001	0.00725 0.1621	1.00000 0.0000	0.57793 0.0001	0.71540 0.0001	0.75652 0.0001	0.73820 0.0001	0.76259 0.0001	0.75587 0.0001
SDQ834	0.00014 0.9786	0.00403 0.4369	0.00480 0.3550	0.00125 0.8091	0.04351 0.0001	0.03531 0.0001	0.02790 0.0001	0.02002 0.0001	0.01541 0.0030	0.57793 0.0001	1.00000 0.0000	0.48936 0.0001	0.51761 0.0001	0.50619 0.0001	0.52237 0.0001	0.51761 0.0001
SDQ841	-0.00023 0.9648	0.00485 0.3497	0.01556 0.0027	0.00715 0.1676	0.04508 0.0001	0.04538 0.0001	0.01457 0.0049	0.03272 0.0001	0.01601 0.0020	0.71540 0.0001	0.48936 0.0001	1.00000 0.0000	0.84083 0.0001	0.82146 0.0001	0.84848 0.0001	0.84057 0.0001
SDQ842	-0.00008 0.9870	0.00504 0.3313	0.01791 0.0006	0.00609 0.2402	0.03704 0.0001	0.10898 0.0001	0.01392 0.0073	0.05190 0.0001	0.01762 0.0007	0.75652 0.0001	0.51761 0.0001	0.84083 0.0001	1.00000 0.0000	0.86887 0.0001	0.89366 0.0001	0.88550 0.0001
SDQ843	0.00050 0.9235	0.00663 0.2012	0.01847 0.0004	0.00632 0.2226	0.02948 0.0001	0.06078 0.0001	0.01301 0.0121	0.05155 0.0001	0.01691 0.0011	0.73820 0.0001	0.50619 0.0001	0.82146 0.0001	0.86887 0.0001	1.00000 0.0000	0.98050 0.0001	0.96951 0.0001
SDQ844	0.00020 0.9694	0.00552 0.2865	0.01546 0.0029	0.00601 0.2463	0.03029 0.0001	0.06051 0.0001	0.01311 0.0114	0.04411 0.0001	0.01804 0.0005	0.76259 0.0001	0.52237 0.0001	0.84848 0.0001	0.89366 0.0001	0.98050 0.0001	1.00000 0.0000	0.98669 0.0001
SDQ851	0.00013 0.9806	0.00543 0.2951	0.01512 0.0035	0.00592 0.2533	0.03017 0.0001	0.06242 0.0001	0.01324 0.0107	0.04470 0.0001	0.01767 0.0007	0.75587 0.0001	0.51761 0.0001	0.84057 0.0001	0.88550 0.0001	0.96951 0.0001	0.98669 0.0001	1.00000 0.0000

APPENDIX G

Bibliography

1. DoDD 4140.40, Basic Objectives and Policies on Provisioning of End Items of Materiel.

2. DoDI 5100.63, Provisioning Relationships Between the Military Services/ Defense Agencies and Commodity Integrated Materiel Managers

3. DLAM 4140.2, Supply Operations Manual.

4. DoDI 4140.42, Determination of Initial Requirements for Secondary Item Spare and Repair Parts.

5. DLAM 4140.3, Materiel Management Manual.

6. McCain, Terence R., "DLA Demand Forecasting Using Service Data in the Provisioning Environment", Concept Paper, DLA-DWSSO, dated 27 July 1984.

7. DoD 4140.26-M, Defense Integrated Materiel Management Manual for Consumable Items, Volume I, Commodity Oriented Items.

8. Howard, G. T., "Wholesale Provisioning Models: Model Optimization", Naval Postgraduate School, Monterey, CA, October 1983.

9. McMasters, Alan W. and Richards F. Russell, "Wholesale Provisioning Models: Model Development", Naval Postgraduate School, September 1983.

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